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Edited by CHARLES W. BALLARD, D. D. S.

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DEVOTED TO THE THEORY AND PRACTICE OF

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THE DENTAL PROFESSION IN EUROPE.

(LETTER FROM DR. FARMLY.)

We are indebted to Dr. Hill for permission to publish the following letter. It will be read with interest. ED. REC.

No. 16 PLACE VENDOME, PARIS.

DR. A. HILL,

My Dear Sir,—I have not been unmindful of the request you made of me to inform you of matters of interest relating to our Profession, nor of my promise to do so; but the rapid traveling from one City, and one Country to another, our short stays at each place, our daily visiting new beauties and wonders of nature and art on a large scale, has prevented my making any particular inquiry into the minute objects of our Profession.

During my short stay in London I had most agreeable interviews with some of the most highly distinguished gentlemen of our Profession there. Mr. Cartwright, who has been the able representative of practical Dentistry in England for some forty years, is still in practice, and although he had gained a high reputation and a large practice when I practised in London, thirty-four years ago, he is now actively engaged, and has a youthful appearance compared with one of "whitened locks" much younger than himself who has been engaged in professional labor a greater part of the time since that period, in New York. Mr. Thomas Bell, who has also been a "hard worker," and who has done more for the Profession in England in years past, by his valuable writings and lectures, than any other man in England, although my senior by several years, has worn better,

and is a much younger looking man. I mention these two instances in this way, to prove that Professional men in England do not wear out by professional labor as rapidly as we do in America.

There are some in the Profession, and many out of it, among his old patients, that will be glad to hear that Mr. Charles Newton, who was in New York when I went there, and was as an Operator taking both the Mechanical and Surgical departments of our art, the cleverest man I had ever known, or ever have known even up to the present day, is still living and in good health. I could not ascertain until the morning I left England where he could be found, therefore did not see him, though to have done so would have given me very great pleasure.

Messrs. Rogers, Tomes, and Biggs, all of whom are highly distinguished men in London, I also had a most agreeable interview with, at the house of Mr. Tomes, who is well known among us for his valuable writings. The manner in which Mr. T. talked of his various modes of practice and exhibited to me his improved instruments (and he has the best assortment of forceps I have ever seen) makes the narrow-minded exclusiveness of some of our own men who deal in mysteries and secrets appear smaller than ever by way of contrast.

There are several American Dentists in London, two of whom I had the pleasure of seeing, whose personal courtesy I not only feel happy in acknowledging, but feel much happier in saying that the professional merits of Mr. Ballard, and also the merits of Mr. Rapn (the latter of whom I met at Mr. Tomes') are owned and appreciated there by the Profession. It is a pleasant thing to have either social or professional intercourse with such men as give character and standing to our calling in England, and I regret that my stay was so limited in London that I could not avail myself of the social courtesies so cordially extended.

As you are the Editor of one of the American journals, I will take occasion to repeat to you a remark made by one of the above-named English gentlemen. He said, "I shall give up all American journals, as they admit so much into them that is low, ungentlemanly, and abusive of each other, that I have a feeling of dread and disgust almost every time I open one." I felt too keenly the truth and justice of the remark to contradict

it, not knowing exactly how far he included myself in the language I have used in exposing deception and imposition, and condemning entirely the whole system of Amalgam practice as followed by many, while at the same time I have endeavored to establish a uniform system of practice without Amalgam, which as a whole I believe all agree with me in sustaining, and as my opponents have never said aught against the practice I recommend, I conclude they have nothing to say. This same gentleman, although he contends for the right to use Amalgam in a very limited number of cases, I was glad to learn from him that he condemns as strongly as I do the wholesale and distributive use that is made of it in both England and America, and I cannot yet perceive how any true lover of Dental science can do otherwise.

There are scattered over the Continent several American Dentists. In Paris there are now four in practice. The Messrs. Evans, Dr. Hoenor from Philadelphia, and a Mr. Potter from New Orleans, all I believe doing well. Mr. T. W. Evans being the Dentist to several of the European Courts, is frequently sent for by them, and is now on one of his Professional visits to Germany.

Mr. Brewster, who is the pioneer and really the establisher of American Dentistry on the Continent of Europe, is now in Paris, but not in practice, as he is precluded by certain stipulations in his negotiations with Mr. Evans, who succeeds him perhaps in the most lucrative practice ever established on the Continent by any one person.

We have but lately returned from the Mountains of Snow and Seas of Ice, in Switzerland, and no thought can conceive and no language describe their grandeur and beauty; and although we ascended and descended the mountains on the backs of mules, going over passes where one would tremble to be upon his own feet fearing he might lose his balance, yet I consider these passes much safer than going upon the glaciers. We crossed on the "mer de glace" one crack or fissure some twenty inches or two feet wide, measuring in depth through solid ice three hundred feet, and were upon another glacier where the guide told us that the depths had been measured to the extent of one thousand feet through solid ice, as clear and as beautiful as that obtained by

our ice dealers from the Rockland Lake. The Seas of Ice, in looking upon them, give you the idea of a sea in violent commotion, with its largest waves rolling, which while rolling were instantly congealed or frozen, so that in ascending to the top of one of these billows you see, as you would on a ship in a storm, the deep trough of the sea all around you. Eight or ten of our party, mostly New Yorkers, by the aid of our guides stood upon the top of one of these icy billows. I asked one of the guides how long they had existed in that form, and his only reply was, "eternelle."

Very truly yours,

E. PARMLY.

GUTTA PERCHA BASES FOR ARTIFICIAL TEETH.

In a communication received from Dr. D. C. Estes, of Albany, relative to Gutta Percha bases for artificial teeth, he says, "It is now nearly eight months since I commenced my experiments with this article, and I have proceeded so far as to insert about one dozen plates, including three entire sets. I first take the raw material, uncompounded with any of the articles usually mixed with it when about to be employed for Dental purposes, and previous to its purification by steam or otherwise. This I purify by treating in hot water and working out the foreign particles. When thus prepared, it is much superior to that which has gone through the melting process for purification, because it requires a much greater heat to affect it.

The first cases put up with this material had the teeth fastened in with the same substance, the base being strengthened by the iron wire as described by Dr. Hill. Although these cases have given satisfaction, still they are liable to objection, as the wire will not always give the desired stability. This objection I have lately overcome in the following manner:—After taking the impression and making the metallic dies in the usual manner, I take tinned sheet iron (such as is used for making tinned ware) and strike up a plate, making it a little smaller every way than

it is required to be when completed ; then select and arrange the teeth on the plate, with wax, try them in the mouth, and then put the whole in plaster and sand as though for a gold case ; remove the wax, line the teeth with the same material as the plate, rivet them firmly, file off and shape the linings with a *coarse* file, so as to leave them as rough as possible, then return the teeth to their bed in the plaster, wash both the linings and the plate under them with muriate of zinc, and proceed to solder by placing small bits of block tin in the crevices and upon the rivets and melting them with the blow pipe. The plate and linings being already tinned over, the solder will flow beautifully and will hold with greater strength than it otherwise would. After this is done, the plate and linings must be made as rough as a burr or coarse file will leave them, and the case then boiled in saleratus water in order to remove the muriate of zinc. Then, with the ordinary puncturing forceps, punch as many holes through the plate as can be made without danger of springing it. This done, take the male die if it is perfect, if not procure one that is, and after thoroughly oiling the surface, take the Gutta Percha, purified as above and rolled into sheets about the thickness of gold plate, soften it by heat and apply it to the die, pressing it with the fingers wet in warm water to every part intended to be covered by the plate. When this is done, the Gutta Percha surface must be again softened by a dry heat, as must also the plate of teeth, the latter must then be placed upon the die covered with the base and pressed quickly and firmly upon it before either the base or plate have time to cool ; sometimes it is necessary to repeat the heatings in order to insure success. The plate must be held in position until the base is properly hardened. Then, with a knife blade (which must be heated in the blaze of the lamp from time to time) trim off the superfluous Gutta Percha, and pack it in between the teeth, filling up all crevices, and in front imitating the form of the gum or alveolus as much as is required to restore the contour of the face ; this last can be more perfectly accomplished in this form of work than with any other with which I am acquainted. After this is finished, the plate must be again warmed, and another sheet of Gutta Percha, also warm, pressed firmly upon its lingual surface so as to touch and unite with the base at the opposite surface of

the plate, the points of union being the numerous spots of Gutta Percha protruding through the holes previously punched through the plate. The last layer of Gutta Percha should be sufficiently broad to allow of its being carried over the linings of the teeth, so as to protect them and the solder from the action of the fluids of the mouth. At this stage of the work a small strip of the gum color should be heated and applied to the front part of the base, so as to imitate the gum as closely as possible. After this, the case should be allowed to cool, and then removed from the die and trimmed with the heated knife blade, care being taken to have every portion of the plate protected by the Gutta Percha. This completes the work, and if due care has been taken the result will be a beautiful set of teeth, with an accuracy of fit that cannot possibly be attained in any other way, the suction often being so strong as to cause inconvenience in removal from the mouth."

Dr. E. states that he has lately combined other materials with the Gutta Percha, viz:—"equal parts of very fine gypsum, quick lime, and whiting," using as much of the ingredients as can be mixed in without causing the Gutta Percha to crumble. He further says that Hill's Stopping is the best material known for this style of work, but the expense is such as to preclude all possibility of its being employed in making cheap sets of teeth. He offers to give up experimenting in this direction, provided Dr. H. will reduce the price of his preparation.

Dr. E. goes on to state that the gum color he uses will not stand, and hopes some one possessing greater facilities will give attention to this point, and make known the result.

ORNAMENTING METALS.

Fertile, varied, and peculiar as are, and have been, the various processes devised for the purposes of ornamenting objects made of metal, we are not aware of any which, in simplicity and beauty, at all equals one that has recently been brought into operation. It emulates in economy the application of transfer-printing to the adornment of japan and papier-mache objects, or the same to

china, when in its biscuit state. In all probability the accidental phenomenon of a comparatively soft substance leaving, by pressure, its impress on a harder material, may have been noticed; it has, however, been reserved for Mr. Sturges, of Birmingham, to apply the same to a practically useful purpose in manufactures, and to devise through its means a style of surface-ornamentation, limited only in versatility by the illimitable resources afforded in the results of the machines of the lace-makers, or the endless forms and devices which may be suggested by human fancy. The process in its simplest form will be best described by stating that, if two or more plates of metal are taken, and between these is laid a piece of wire-webbing, thread lace, perforated or cut paper, and the two sheets of metal, with the pattern of thread lace, wire-web, or paper between them, be passed through a pair of ordinary rolls employed for the rolling of metal—the two sheets of metal being thereafter separated, an impression of the pattern will be found on each, corresponding to the compressibility of the material of which the pattern is formed, or the hardness of the sheet of metal to be so ornamented. The known delicacy of such a material as thread lace, opposed to the hard and comparatively unyielding metallic substance to be ornamented, and yet by its agency indenting the latter, will doubtless be productive of matter of wonder to the uninitiated; we can, however, inform our readers that we have seen the same piece of lace employed in ten successive operations in Britannia metal ornamentation, and with a manifest improvement in each operation, until the cohesive property of the fibre out of which the lace was made became destroyed by the pressure.

Ornaments in lace or paper will also leave their impress upon a steel plate most distinctly, and in very considerable relief or incision; this has been proved by actual experiment. The fitness of thread lace for the purpose is much improved by its immersion in a starchy liquid, and thereafter drying the same on heated cylinders, viz., such as are used by lace or ribbon manufacturers. Lace net, and sewed work on muslin, appear to be best fitted for giving impressions upon tin or Britannia metal in the indented manner. A style of ornamentation in relief is produced by the substitution of cut-out or perforated paper, or metal; thus the employment of perforated zinc as a medium re-

sulted in one of the most perfect of specimens yet produced. When paper is to be used, the design is to cut out as stencil pattern, or such as is used in poonah-painting, or as the metallic perforated or cut-out plates for marking cases; this paper or sheet of metal, occupies the same position as the lace, viz., between the two sheets; the three thicknesses being then passed through the rolls, interstices or perforations in the paper appear with a raised surface, bright—the surrounding metal being dead or matted. The durability of such a tender substance as paper will excite astonishment, when we say that eighteen salvers were ornamented with a single piece of perforated paper. In using paper for the purpose of a pattern, its usefulness and durability are considerably increased by immersion in a liquid metallic solution—such as sulphate of copper or tin—rolling the same on hot cylinders, or subjecting it to the action of a powerful press; this serves to render the paper tough, compact, and prevents elongation from taking place between the metals. Ordinary sand-paper produces the most perfect dead matted surface imaginable; though the softest of the materials already specified as being used for the purpose of producing the ornament, leaves its impress upon tinned iron, German silver, sheet brass, copper, or Britannia metal.

It will readily be understood that the depth, as has been explained, varies according to the hardness of the metal which is desired to be ornamented; thus lace, which gives a comparatively deep impress upon the alloys of tin, gives one of a shallower kind on nickel silver. To secure the requisite depth of ornamentation on the harder metals, it became necessary to devise a means by which delicate lace, formed out of metallic wire, could be produced. It is one of the peculiarities of our country, that on a difficulty or want being suggested, there are thousands of active brains and hands ready, at a moment's notice, to try to obviate the difficulty or supply the want; the result in the present instance has been the adaptation of a lace machine for the production of gossamer, web-like lace, formed of wire, which, when applied so as to take the place of thread lace, or the metallic saturated paper pattern, (viz., between the sheets of metal to be ornamented,) on German silver, brass, or copper, leaves a deep, clear, and distinct series of reticulations or inden-

tations, corresponding to the simplicity or complexity of the pattern of the lace, &c. This lace is produced with equal facility, plain or figured; and for the purpose of blinds for windows, or for bird cages, the repeated pressures to which it is subjected, in rolling between the plates of metal to be ornamented, much improve its quality for such application.

In the present state of the invention, it appears very difficult to place any limit to the nature of the materials out of which patterns may be made; as, for instance, the writer of this notice picked up, in an afternoon ramble in the country, two or three specimens of what Coleridge has so poetically described as—

“Brown skeletons of leaves that lag
By forest brook along.”

These placed between plates of previously rolled soft metal, and subjected to pressure, on the separation of the plates, each disclosed the delicate markings of the tender frame work upon which the vegetable matter that makes up the leaf had been stretched; not a single spar or rib was wanting. These impressions could be printed from with ease, and would serve as illustrations of the structural form of leaves for the use of those interested in the study of the science of botany. Very excellent impressions may, in like manner, be procured from lace; and the lace manufacturer has thus at his command the means of producing a pattern book of his designs without the trouble or expense of engraving the same; the depth of the indentation is sufficient to hold the necessary quantity of ink to produce an impression by means of the ordinary copper-plate press, or by surface block-printing. As, however, in the first instance, it is intended to use the process more particularly for the purpose of ornamenting those portions of the surfaces of manufactured objects in electro-plate, which have hitherto been left plain, it is unnecessary to enter more minutely into the description of the same, as applied to printing; its perfect applicability has, however, been sufficiently clearly demonstrated, and, in the present instance, has been indicated in order to show to what extent one invention may affect other departments of trade than the individual one for which it was originally intended. No doubt can exist as to the present invention superseding, to a great extent,

in the production of an universal class of goods, the method of ornamentation by means of engraving. The delicate reticulations of the lace markings give a richness of appearance hitherto unattainable without a corresponding addition of cost for engraving and embossing, and which placed them beyond the reach of an ordinary class of purchasers.

Objects may be manufactured from ornamented Britannia metal sheet by the process of "spinning," a mode of production which entirely throws into the shade all others employed for securing, in the objects produced, elegance of outline; the pressure of tools used in the process does not remove the markings produced by the various mediums employed to produce the ornamental metal. The ordinary method of raising the metal into shape by the stamp and die may also be taken advantage of with the most perfect confidence, as the indentations on the metal do not appear to suffer thereby. Elegantly formed tea services, salvers, cruet-frames, dish covers, drinking cups, urns, and other objects produced in electro-plated and gilt metals, are so many evidences of the utility, economy, and ornamental character of the invention as applied to the art of the worker in electro-plate and Britannia metal goods. The process illustrates a philosophical truth, viz: the compressibility, yet indestructibility of matter, in connection with the cohesion of the several particles, forming the substances out of which the patterns are made.—*London Art Journal*.

The foregoing article, copied from the *Year Book of Facts*, describes a new and interesting process of ornamenting metals, that can be made of eminent practical utility in the mechanical department of our practice. We believe that by the method described, and with a suitable intervening substance, the palatine surfaces of atmospheric plates can be made to contain innumerable cavities, from which the air can be exhausted, and the suction greatly increased, besides giving additional steadiness to the case, in consequence of the minute air chambers being distributed over the whole surface of the plate. It is our belief that for whole upper sets the coarse sand-paper will be found to produce the best possible palatine surfaces. Air chambers, so numerous, so small, so perfectly defined and so equally distributed, must, we think, present many desirable advantages over those now in use. They cannot interfere with the articulation; they cannot give rise to inflammation of the mucous membrane,

or to those depositions of bone which are frequently the result of wearing plates with large cavities, at the same time the actual amount of vacuity by the proposed method would be much greater than with the largest and most *inconvenient* air chamber (so called.)

ON THE TOXICOPHAGI.—(ARSENIC EATERS.)

BY DR. TSCHUDI.

(*Wiener Medizinische Wochenschrift*, No. 1, 1853.)

“The immense interest excited by my communications on the toxicophagi in the 28th number of the first year of this journal, induced me to devote, during the period of a year, my whole attention to this fact, so interesting in a medical and legal point of view, and which, if not denied, has been at least doubted by several English journals. I have been able during this time, to confirm perfectly my former statements, and to increase them by nearly identical examples. One of the most inveterate arsenic eaters, who at first, as usual, denied most obstinately making use personally of arsenic, in the end made the fullest avowal, and told me that he had taken his dose of arsenic with great regularity from his twenty-seventh year to the age of sixty-three, several times (eight to ten) per month, at the time of new moon. He began with a small fragment of the size of a flax-seed, and during many years did not go beyond a dose of which he indicated the amount by a little bit of charcoal. I took the trouble to weigh a piece of Hungarian arsenic of the same dimensions; the weight was between three and four grains. When I asked him why he had not increased the quantity, he replied that he had not dared to do so, having been made ill by it some years previously. At that time he took, while intoxicated, a larger quantity, which occasioned violent colic, a burning pain in the throat, griping at the stomach, &c. The reason why he has abstained from arsenic for nearly two years is the death of one of his friends, also an arsenic eater, who died of a dropsy, and who had suffered much. He thought this was owing to the arsenic, and, dreading a similar fate, had not taken the ‘hidri’ since, although this abstinence caused him much inconvenience.

"Since this man has ceased taking arsenic, he is frequently subject to violent gastrodynia. During all the time that he was addicted to it, he was ill only once, of a pneumonia. A circumstance worthy of remark was the immunity which this individual enjoyed from the itch, at a time when every individual in the house, with whom he lived in uninterrupted contact, was attacked by it. According to an approximate calculation, this man took, during thirty-five years, from twenty to twenty-two ounces of arsenic; and yet this frightful quantity of one of the most violent of the metallic poisons, produced no considerable alteration of the health, if we except a certain thickness and roughness of the voice, which moreover was more marked a few years ago. This phenomenon is very general among the arsenic eaters.

"I subjoin an extract from a letter of a clergyman, A*** de M***, who reports concerning this fact:—'The information I have obtained shows that the individual in question carefully concealed his secret from every one; it was generally said, however, that it was a case of arsenic eating. This man is fifty-five years old, appears in very good health, is strong, and has never been seriously ill, but he is always *hoarse*. He conceals the use of arsenic through fear of encountering the rigor of the law by the possession and employment of this poison. He would find himself deprived of a remedy indispensable to his health, and would be unable to obtain it. It is said that he increases the dose at the new moon, and diminishes it as she wanes.'

"The manner of taking the arsenic varies much with different toxicophagi. Some take their dose all at once, allowing it to dissolve slowly in the mouth, and on an empty stomach. Others reduce it to powder, and sprinkle it on bread, or on a small lump of fresh lard. Most of them observe the lunar phases, which play so important a part in popular therapeutics, and suspend, or considerably diminish the quantity of arsenic towards the end of the moon. Those who use it to facilitate the mounting of ascents, take it at the moment of starting, without regard to the lunar period.

"I cannot refrain from alluding here to an attempt at poisoning which was reported in several journals, if I mistake not, towards the end of 1852 or the beginning of 1853.

"A domestic at a country seat in the north of France, desired

to rid himself of a superintendence which he found too severe. For this purpose he mixed arsenic with the food of the lady for a considerable length of time, hoping to be able to avoid every suspicion of murder by the slow operation of the poison and of the symptoms which resulted from it. To his great astonishment, he beheld the lady gaining visibly for several months in flesh, appearance, and spirits. Perceiving that the small doses produced a contrary effect to that which he desired, he mixed a much larger quantity with some fricasee chicken. The violence of the symptoms speedily produced by this dish led to the discovery of 'the attempt at poisoning, and of its author, who was arrested. In this case we see the same phenomena presented by the toxicophagi of our countries.

"At the time of my first communications on this subject, I was acquainted with arsenic eating only in a small district of Lower Austria and Styria; since then I have received communications from other and highly respectable sources, from which it appears that the use of this poison is pretty generally spread in the mountains of Austria, Styria, and especially at Salzbουργ, and in the Tyrol, among the chamois hunters. M. Schneider, in his work on '*Chimie Légale* (pp. 169, 1851,) speaks of this, and refers to the large doses of arsenic prescribed by some physicians without evil effects. While this article was in the printer's hands, the following very interesting communication reached me from a friendly and highly respectable source:—M. F*** S***, director of the arsenic mines belonging to a wholesale druggist, M. F. S., at M***kl, in L***au, has taken every morning for many years, a small pinch (as much as the point of a knife will hold) of powdered arsenic, to preserve himself against the pernicious effects of the manufacture of arsenic. This gentleman sent to a distinguished physician of the place one of these pinches, which he takes openly, and this quantity weighed three and three quarter grains. Consequently he ingests daily from three to four grains of arsenic, and he enjoys excellent health. It is said that he furnishes his workmen with a system of rules on the manner of using arsenic as a prophylactic against the injurious effects of the mining of this poison.

"Let us now pass to animals. Horses are those to which arsenic is most generally given. I have already explained the

object of this practice, and I will complete my communication by describing the mode of proceeding. Every groom has a different way, but each adheres rigorously to his method once chosen; and all agree on this point, that arsenic ought to be administered to horses only at the new moon. Some give it daily at this time, in the dose of three or four grains. Others administer it until full moon, two days at a time, suspending it during two days, and then increase the quantity the next two days. During these intervals they give the animals, once a week, an aloetic purgative. These people observe rigorously the rule to give arsenic to horses only after giving them food and water. A piece of bread serves as vehicle for the arsenical powder. If the animal is to take the arsenic while in use, a piece is wrapped up in linen, or some of the powder is scattered on lard also enveloped in linen, and the whole is attached to the bit or bridle. It appears that a part of the poison is eliminated with the excrements, for it is often noticed that chickens die after eating the oats contained in dung of horses subjected to arsenical regimen. The grooms pretend that arsenic is an infallible preventive against the colic of horses fed on rye, which is well known to predispose to this affection.

“The use of arsenic for horned cattle is less frequent; it is only given to oxen and calves intended for fattening. The precautions respecting the lunar phases above described, are equally observed, and the arsenical powder is given to the animal with oatmeal mixed with chopped straw, and infused in warm water. The effect is very surprising as to the increase in the size of the animal, but he does not gain proportionably in weight. For this reason the butchers rarely buy cattle fattened in this manner by the eye, for the real weight is inferior to that which might be inferred from the appearance. It is needless to remark that this process is only employed for cattle intended for fattening, and never for draught animals. In Styria, as well as in Austria, there are farmers who, on account of this practice, are known by the name of *hidri-bauer* (arsenic-peasants). Arsenic is often given in small doses to hogs, especially when beginning to fatten them; a dose of the sulphuret of antimony is also sometimes given daily. It has been found that the *purified* sulphuret of antimony (*antimonium sulphuratum nigrum lævigatum*), such

as is prepared by the druggists, is inert, and that it is only the wholesale article which exerts its known effect. This may be owing to the not insignificant quantity of sulphuret of arsenic usually contained in the latter article.

"It will be seen that the employment of arsenic with animals is subject to the same rules observed by the toxicophagi themselves. It would not be uninteresting to know whether the beneficial effects of small doses of this poison observed in animals has led to experiments on the human subject, or *vice versa*, if this practice passed from the province of human therapeutics to that of animals."

Note by the Editor.—It is to be wished that scientific men living in the localities where the *arsenic-eaters* are said to be found, would confirm or deny the facts advanced by M. Tschudi. A. CHEVALLIER.—*Boston Medical and Surgical Journal*.

ANAPLASTY.

Prof. F. H. Hamilton, speaking of the treatment of old ulcers, says, "I propose to close the ulcer by an operation of Anaplasty. In short, to imitate one of the processes of nature, by sliding in old skin to repair a waste, where the process of forming new skin has ceased and finally been given up."

"If we seek to obtain this supply from the neighborhood of the ulcer, around which the skin has already reached its utmost tension, we shall only substitute one ulcer for another; we must therefore generally look to the opposite limb, or to the limb of some other person, for the material from which the transplantation or engrafting is to be made.

"The mode of accomplishing this will not differ materially from that which has generally been adopted in Anaplasty from remote parts, except that the ulcerated surface ought to be excised freely before the new skin is laid upon it.

By this means I hope not only to supply an amount of skin equal to the size of the piece transferred, but to furnish also a nucleus from which additional skin may be formed. I hope to establish a new centre of life—an oasis—from whose outer verge

a true and healthy vegetation shall advance in every direction over the exhausted soil.

"It is not improbable, also, that the graft itself will expand or be drawn centrifugally by the contraction of the surrounding granulations and cicatrix, conversely, as the skin about the ulcer had before been stretched and drawn centripetally, by a similar action of the granulations and cicatrix situated within its free margin, so that after a time it will cover more space, independent of any actual growth than it did originally. The opposite of this happens usually in Anaplasty, and would occur here did the flap equal or exceed the wants of the parts to be supplied. The flap would contract, thicken, and project itself above the surface, but in old ulcers it will generally be found impossible to furnish a direct supply of integument equal to the loss. A deficiency must probably still exist, and sufficient, it is believed to determine in the transplanted skin a necessity of expansion."

The following is the author's summary:—1st. Ulcers accompanied with extensive loss of integument do generally refuse to heal, whatever may be the health of the body or of the limb."

2nd. "Anaplasty will sometimes succeed in effecting a permanent cure, and especially where the health of the body and the limb are perfect, and where, by inference, the refusal to heal is alone attributable to the extent of tegumentary loss."

3rd. "The graft must be brought from a part quite remote; generally from an opposite limb, or from another person."

4th. "If smaller than the chasm which it is intended to fill, the graft will grow, or project from itself new skin to supply the deficiency."

5th. "It is not improbable that the graft will expand during the process of cicatrization, at its margins, but especially for a time after cicatrization is consummated."

6th. "In consequence of one or both of these two latter circumstances, it will not be necessary to make the graft as large as the deficiency it is intended to supply."—*Ohio Medical and Surgical Journal*.

EDITORIAL.

It has not been without many misgivings, and a due sense of personal unfitness for the position, that the writer of this has consented to assume the editorial supervision of the Dental Recorder; nor was this consent given until it was ascertained that better men—men eminently qualified to fulfil the various and arduous duties pertaining to the office had refused to serve, feeling, doubtless, that their whole time, labor, and energies were required in alleviating that portion of human suffering which has called into existence the Dentist and the Profession of Dental Surgery.

However wise the course of these gentlemen is to be considered, and howmuch-soever for the general good, still it leaves their professional brethren much to regret; and as it was evident that the position, with its accompanying cares, duties, and responsibilities, must be assumed by some one, *we* consented to bear the load—a most unfitting one, as our short experience proves.

The duties thus devolving upon us require for their proper fulfillment a sacrifice of time, labor, and thought, for which we are amply pre-paid by the slight possibility in view of being thus enabled to serve usefully our professional brethren. Happy, indeed, shall we be if we can close the present volume with the assurance that we have returned some good for many, *very many*, favors received. Personally, we feel that we can do but little; but that little will, so far as our ability permits, be faithfully accomplished. Of our friends and correspondents we can speak more freely. Assurances have been received from a number of gentlemen, eminent both as writers and Dentists, that they will, from time to time, enrich our pages with the treasures of their minds, and the teachings of their experience.

It is needless to add that these assurances have vastly increased the trifling amount of confidence we possessed, and which we had too many reasons to fear would, by a short editorial experience, be utterly crushed out. Such a fate may yet befall us. Abundant “opportunity” will, doubtless, be presented; should we realize it, nothing will be offered in extenuation but our motives; and there will then remain with us the “sweet and bitter” satisfaction of knowing that

“’Tis better to try and fail
Than not to try.”

In conclusion, we would most respectfully remind our subscribers and the members of the Profession at large, that, *they too* have duties to fulfill. The jewels of their experience are the dues of the Profession. They have no right to withhold them.

No one can practice Dentistry, or any other scientific calling, without being greatly indebted for information to his co-laborers, as well as to those noble pioneers in science who helped “make the way straight.” The man who will not readily give that which he at first so earnestly craved and so freely received, commits a breach of trust, and will reap deserved contempt.

We are very well aware that it is a "sore trial" and a "great work" to write a first article; but the car of duty should ride triumphant over such obstacles; and the road once broken through, grows smoother by repeated use. The question is simply, Will you do your duty, and assist in the onward march? or will you remain passive, and be as "clogs to the wheels of science"—a disgrace to yourselves and your profession.

The *monthly issues* of this periodical offer facilities to correspondents that are not to be found elsewhere; and readers as well as writers should bear this in mind.

The pages of the Recorder are free to all who have facts to communicate or items of interest to the Profession to discuss; but under no consideration will any thing of a personal, scurrilous, or slanderous nature find place in its columns. To those whose pleasure consists in reading or writing such articles we extend a cordial invitation to go farther, for they cannot fare worse than here.

We wish it also to be distinctly understood, that the Dental Recorder is not published for the purpose of advocating or favoring the private interests of any clique, school, or section. Our words and actions we hope to govern with a view to the "greatest good to the greatest number," and by doing justice to *all*. The interests of the Profession are our interests; and our purpose is the promotion and diffusion of Dental Science.

CHARLES WILEY BALLARD,

139 Fourth Avenue.

Below we give the evidence of the complainant in the case of Dr. Beale. With regard to the guilt or innocence of the accused, we have nothing to say. But this much we can say with confidence, that had the same testimony, minus the ether, been laid before the same or any other jury, the witness would have been laughed to scorn, and the case dismissed at once. How much *additional credibility* the witness is entitled to in consequence of an over-dose of ether or chloroform we leave to sane men to judge for themselves. In our opinion, had the case been one of petit larceny, and the testimony equally defective, no conviction would have resulted. We have italicised some of the inconsistencies in the following:

I went into the office; took off my bonnet, and Dr. B—— went to the wash-stand to wash his hands, and he asked me after the family; I took a seat in the operating chair; in a few minutes Dr. B—— told me one of the men wanted to speak to him, and he gave me a book to read and left the room; did not say what man; I supposed there were men there; he has a room in which the teeth are made; I believed those to be the men; Dr. B——'s family were out of town at that time; he said so, and the door was opened, and there was no furniture in the front room; I don't know how long Dr. B—— was absent; when he came back I was sitting in the operating chair; he went to the instrument case, and began with my tooth; the tooth was on the left side; he commenced operating on the tooth before he gave me ether; the operation was very painful; he said he would *either put something in to destroy the nerve, or give me ether, leaving the choice to me*; I told him I'd prefer taking ether; I didn't learn what he proposed putting into the tooth; he gave me the ether on a small napkin, folded up; I felt very dizzy at first; I was cold and felt very numb; it increased upon me; I did not lose my consciousness of what was doing; I continued to breathe the ether; my eyes were closed; I closed them voluntarily; I did not try to open them for some time after; *after he gave me the ether he did not, as I remember, operate on my tooth* he felt my pulse several times; put his hand on my arm under my sleeve, up my arm; I had a loose sleeve; he did it once; he put his hand on my breast

under my dress; on the bosom; he put his hand on my person, under my dress; I have a distinct memory of that; I was not able to make any resistance or outcry; he went round before me and raised my clothes; I am perfectly distinct in my memory of that; *I did not try to cry out; do not know if I was able; after he had raised my clothes, my feet were crossed, and he raised them and put one on each side of the stool; he then put his arm around me under my clothes; he drew me down to the edge of the chair; I do not know what he did after that till I felt pain; he did enter my person; it was then I felt the pain; I was not able to cry out or resist; I did not try; I don't know what was his position; my eyes were closed; I have no doubt that he did enter my person, and give me pain; all this time I was conscious of everything that was going on; after this he left me and crossed the room to the washstand; I heard him pour out water into the basin; after he had been to the washstand and returned, I opened my eyes, and saw my clothes up; he did not see me; I have a clear recollection of seeing my clothes up; I closed my eyes immediately; he put down my clothes, and in a few minutes he was at the side of the chair, and lifted me up into the seat; I was just to the edge of the seat; it was a large dentist chair; in a few minutes he told me he'd have to take the tooth out; that was the first remark he made, except the first, when he asked me if I was getting sleepy; at the time he entered my person I did not feel his person against me; pain I distinctly felt; when he spoke about taking out the tooth, I asked him why? he said they were both decayed, and he could not save them both; I told him I was afraid it would pain me, and he said he would not let it; he then gave me more ether, and extracted the tooth; it was on the left side; when he extracted the tooth it was painful; I screamed then; he then assisted me to rise, and led me to the rocking chair; I felt a little dizzy when he led me to the rocking chair; he then went out of the room and in a few minutes came up with a lady; I have not seen her since; he asked me if I would be introduced to her; I believe I said no; he did not introduce me then; I heard him tell the lady he'd always been our dentist, and that we never had any other; he said my teeth were very good; he said I had taken ether, when the tooth was extracted; I think she said something about hearing me scream; he said yes, ether had not much effect on me, I was either nervous or for some cause; in a little while I got up, and he introduced me to the lady; I think it was Mrs. P—; I made several remarks, but I don't know what they were; I then put on my bonnet, and Dr. B— followed me down stairs; the lady was left up stairs; he came to the door, and I wanted to stop an omnibus; he asked me how far I was going, and I told him to Third street and Lombard; he told me I had better walk; he said he thought I had some of the ether in me, and the walking would do me good; I walked down Walnut to Sixth, and did not get in an omnibus; I did not reproach Dr. B— at the house; I was afraid; I stopped in C— ice cream saloon, at Sixth, below Prune; I got ice cream; I went then along Sixth Street to Spruce, and down to Third and Lombard streets; I was going to see a young woman that sent for me; I did see her; don't recollect how long I was there; when I left I came up to Mr. T—'s, at Chestnut street, near Fifth; I was very intimate with Mr. and Mrs. T—; I met Mr. M— on the way up, near Sixth and Chestnut street; he joined me and spoke to me; did not accompany me to Mr. T—'s; did not meet any but those I have named; I reached Mrs. T—'s at one o'clock; they had not been to dinner; I first mentioned to Mrs. T— what had occurred at Dr. B—'s; the same day after tea; that afternoon I was taken unwell; it was the usual time; the door of the dentistry room at Dr. B—'s was shut; there are two doors in the room; the one leading to the entry door was closed; Dr. B— said that he closed the door because the smell of the ether would go over the house; the door was shut before he gave me the ether; the chair is one that leans backwards.**

Cross-examined.—Dr. B— was the dentist of our family; don't remember the number of years; it was from the time of my early youth; he attended to all the members of the family so far as they required it; I went to him with the approval of my parents; he generally behaved like a gentleman; I did not know his family; don't know how many years I have been his patient; when I called with Miss Thr— it was to get my tooth plugged; on several times before I had taken

* Dr. Farmlly, in his report, stated that this was not the case.

ether; I requested it to be given; I don't remember of his persuading me from it; the tooth was not plugged when I was there with Miss Thr—; the following Thursday was appointed for future operation; I did not go on Thursday; Mr. Thr— had the appointment made; I believe it was on Wednesday morning; I received a letter from him to that effect; I requested him to go in with me; he was there when the woman came to the door; I was shown into the front parlour; it was the usual place; it was but a few minutes before the ladies came down; Mr. B— came down before; he said he had several young ladies up stairs and would be down in a few minutes; I went into the usual operating room up stairs; the door opening into the front room was opened at the time; it was the back room of the main building I was in; the workshop is the second story back building; don't know how far from the room in which I was; it is not upon the same level; it is lower; I don't know if I could see into the windows of the workshop from the window of the room in which I sat; when Mr. B— went to see the workmen he gave me one of the monthly magazines; while I was in the room nobody came to the door that I saw or heard; don't know of the doctor leaving that room; did not see any woman there except Mrs. P— and the Miss H—; the windows were closed in the room, i. e. the sashes were down; no change was made in their condition while I was there; don't remember any one calling as a sitter while I was there and Dr. B—'s speaking of it; I did not know of Mrs. P—'s being in that house before she was brought up stairs; I don't remember speaking to Dr. B— of the fan and requesting him to give me ether; from the time I closed my eyes after the ether had been taken, I did not open them until after the liberties had been taken: I did not open my eyes until he returned from the washstand; what I have described is from what I have heard and did not see; I did not see any part of his person exposed, nor the application of any part of his person to me; don't know, except from pain, what part of his person was applied to me; he passed his hand up my arm immediately after he had felt my pulse; after the ether was administered a second time no liberties were taken; I judge that he did not see me when I opened my eyes, because he was not in front of me; when he told me he would have to pull the tooth, I asked him why; the reason why I agreed to take the ether a second time was because I was afraid; I was not afraid to have my tooth taken out, or to be operated upon further; I don't know if either of my teeth were prepared for plugging; I suppose he touched the tooth he took out; that gave me pain; I told him I'd had the tooth-ache; another appointment was made for Monday at two o'clock; I asked him when I was to come again to have them finished, and he said at that time; I asked him that when I was going and had my things on; he booked it at my instance; I don't know if it was before Mrs. P— came in or not; Dr. B— did not say there was a sitter waiting for the chair; I did not see any one call to inform him of a sitter; I never notice such small things as that; don't know how long after he had finished the tooth that he went down for Mrs. P—; I did not remain more than five minutes; Mrs. P— said she came from the country and came to have her teeth attended to; Dr. B— followed me down stairs; that is his custom, not only with me, but with other ladies; when at the door I did not manifest any displeasure with him; I told the doctor I wanted an omnibus; I believe I bid him good bye; soon after I got out of the door of the second story; I told him to say good bye to Mrs. P— for me, as I had forgotten it; the chair I sat in was the one I had always used; there was but one operating chair in the room; Dr. B— asked me if I ever rode on horseback; I said yes, sometimes; he said, ride over and see us. I replied, perhaps I will; that was up stairs; on the way down to C—'s I did not meet any one I knew; I did not meet any one on my way to Third and Lombard streets; I told Dr. B— I was going on an errand to Third and Lombard streets; it was an errand for my sister in respect to some articles of dress; I did not speak to her of the treatment I received; did not sit down very long; when I left Dr. B—'s I think it was a few minutes before or after twelve o'clock; I don't remember which; I don't know how long I was at C—'s; not long; reached Mrs. T—'s a little after one o'clock; Mr. M'K—, whom I met, asked after the family; I did not tell him where I had been; he only walked with me a short distance; I did not complain of any pain to Dr. B—, except the pain of my teeth; I don't remember how long the first application of the ether lasted; after I took it, I felt no pain in my teeth; cannot describe the effect of the ether, except that it

made me dizzy; I did not see the doctor at all during the operation of the first ether; *I felt his breath, as well as felt pain*; the pain did not continue long: *I had no other indication of the approach of my monthly discharge but that day; it occurred in the evening; I did not examine my person in the interval*; nobody examined it between those times; *I did not examine my garments; my mother did on Sunday afternoon; nobody before*; those garments don't remain now as they did then; they are washed; *I don't know when*; I made the communication to Mrs. T—— after tea on Friday evening; I told Mrs. T—— before I became unwell; I gave evidence before the Mayor; don't know if the garment was washed before that; it was not washed till I went out home; during the time I was at Mrs. T——'s till I was taken unwell, no physician was sent for; *I was never examined by a physician*; on the afternoon of Friday I was out riding with Mr. and Mrs. T——; we set out about six; I do not know where we went; somewhere on the plank road; it was some time after I returned that a felt unwell; spoke to Mrs. T—— on that subject after tea; we had tea as soon as we came home from riding; Mrs. T—— told Mr. T——, and Mr. Thr—— asked me a single question about it; I answered it; and that was all I said; it was before I felt unwell that I told Mr. Thr—— about it; he remained as long as I did, and went to my grandmother's with me; on the next day I went out to the depot, but did not get to my father's; Mr. Thr—— accompanied me to the depot; I met Mr. and Mrs. T—— out there; I did not see my father or mother; I saw my father on Monday morning in Fifth-street; at the time he left to go down stairs, I did not see if he opened the door or not; I was sitting with my back to the door; I don't know why I refused to be introduced to the lady when he first asked me the question; my father and Mr. Thr—— accompanied me to the Mayor; Mr. and Mrs. T—— and my two uncles were there; my father was there before I was.

Re-examined. I said that Dr. B—— generally used me like a gentleman; he said a year ago that he should like me for his second wife; he had a good many children, but they should not trouble me, as he would get nurses for them; I spoke of it at home to my mother and sisters; after the doctor took me out of the chair after the operation, all that I said was in answer to questions by him, or to remarks; the reason why I did make another appointment with him (Dr. B——) was that I did not want him to know that I knew anything of his conduct; I had not concluded what course to pursue.

Miss M—— was asked in reference to the question put to her by Mr. Thr——, which was objected to by Mr. Brown. The Court overruled the question.

By Mr. Brown. The remark of Dr. B—— about having me for a second wife was, I thought, spoken sportively; I thought it improper, but mother said not.

NEW-YORK SOCIETY OF DENTAL SURGEONS.

This association has we understand come to a *dead stop*, its effects sold at auction, and the proceeds we believe divided among the members. Quite a spirited contest was had for the *Diploma plate*; the bidders afterwards asserting that they wished it merely for the purpose of keeping it out of *bad hands*. As none but the members were allowed to bid, we must take it for granted that there were some black sheep in the flock. We are bound to suppose that when an association of this kind is established that there is some special object in view to warrant the loss of time, expense, &c., &c., attending the establishment and perpetuation of the concern. We are also equally compelled to assume that unless the association become bankrupt, that its existence will continue until the object for which it was established is accomplished or found to be impracticable. The question at once arises, did the society, or rather its *members*, succeed in attaining and accomplishing the end desired? Who will give us some light (not gas light) on this subject? We believe the society was successful in one thing, viz: in furnishing an office a piece, or

nearly so, for each of its members. We are able to premise this much from the *reports* seen from time to time in the daily papers.

The American Society of Dental Surgeons has not yet held its *annual* meeting, due at Cincinnati last August. This is we believe the second time the members have failed to have their reunion in consequence of the prevalence of cholera.

Since the above was penned, we have been informed by Professor E. Townsend, President of the society, that the next meeting will take place at Cincinnati on the second Tuesday in May.

We understand that the Dental Colleges are doing very well this year. In the Philadelphia institution they have at present twenty-nine matriculants, and in Baltimore between forty and fifty. The course of education pursued in these institutions seems to be rapidly gaining favor both with the Profession and the public, at least so we should judge from the success of the Colleges and their graduates. The day has passed when the possession and *exhibition* of a mere medical diploma is to be considered a guarantee of superior excellence to the *non-medically* educated Dentist. It is now generally conceded that Dentists are not educated in medical colleges. Of course the possession of a thorough medical education is an advantage to be prized; but it should be made a matter of usefulness, and not a means of self-inflation. Diplomas of any description are simply certificates of recommendation on parchment; and no matter how broad or thick the sheepskin may be, the owner, if he is unworthy, will soon exhibit his *ears*.

ALVEOLAR ABSCESS.

In our article published in the New-York Medical Gazette and copied in the November and December numbers of the Recorder, we hardly thought it necessary to state that *white* floss silk should be used. Since then a friend has acquainted us of *distinguished* success in staining a front tooth pink by using red floss, and what was still more important, he had not succeeded in ridding the blushing member of its sanguinary hue.

We shall shortly give, in the pages of the Recorder, an account of some of the successful, and also some of unsuccessful operations performed upon the plan made public in those papers. We believe, always where it is possible, that it is better to publish both sides of a question. By so doing we can the more readily follow success and avoid failures.

STYPTIC BALSAM.

Dr. James Warren gives the following formula for this preparation:—Sulphuric acid, (by weight,) five drachms; oil of turpentine and alcohol, each, two fluid ounces.

Place the acid in a mortar, and add the turpentine slowly, stirring constantly with the pestle; then add the alcohol in the same manner, and continue stirring until no more fumes arise, when it must be bottled and stopped with a ground stopper. The dose is forty drops, to be first incorporated with sugar, and then dissolved in a tea-cup full of water. It may be repeated every hour until three or four doses are taken.

Said to be very efficacious in hæmoptysis, epistaxis, and menorrhagia.—*Memphis Medical Recorder.*

LETHEAN LINIMENT.

This name is given, by Dr. Tilman Douglass, to a liniment made in the following manner:—Digest a bar of fresh turpentine soap and four ounces of gum camphor in a gallon of alcohol, for two weeks, in the heat of the sun. It is then bottled up while hot and one drachm of chloroform added to every four ounces, set in a cool place and shaken occasionally while coagulating. The mode of applying it, to coat the part well, and cover it immediately with paper, which will adhere firmly and produce a gentle burning, tingling sensation, which in neuralgia, rheumatism, irritability of the stomach, cramps, colic, &c., is perfectly delightful.—*Memphis Medical Recorder.*

MEDICAL JURISPRUDENCE.

In a recent case of prosecution for malpractice, Judge Minot, the presiding justice, laid down the law as follows:—

1st. The medical man engages that he possesses a reasonable degree of skill, such as is ordinarily possessed by his profession generally.

2nd. He engages to exercise that skill with reasonable care and diligence.

3rd. He engages to exercise his best judgement, but is not responsible for a mistake of judgment. Beyond this the defendant is not responsible. The patient himself must be responsible for all else. If he desires the highest degree of skill and care, he must secure it himself.

"It is a rule of law that a medical practitioner never insures the result."—*N. H. Journal of Medicine.*

BOOK TABLE.

HARRIS' DICTIONARY OF DENTAL SURGERY.

We would again call attention to the second edition of this work. It contains as much reliable information as any work pretending to treat of Dental Science; and its arrangement in alphabetical order gives it an advantage over all other Dental works that will be appreciated by those who consider time saving a valuable consideration.

We must confess that there are *some* hard words to be found in its columns; and we would advise beginners to pronounce these in "whispered tones," or glass will break. There are a few that we will not attempt until we meet with a satisfactory splint for fractured hyoid bones. However, in spite of this slight risk, we can and do cheerfully recommend the work. The edition is a small one, and we hope the subscribers to the Recorder will each take an early opportunity of possessing themselves of a copy.

While we are upon this subject, however, we feel compelled to state our conviction that there are to be found in our ranks very many who are not to be instructed by books, or by the counsels of others, perhaps not even by their own experience. These "latter day" Solomons are in themselves living, walking, and *sometimes* working cyclopedias; unfortunately all they know is comprised in the letter O, while the remainder of the alphabet is exhausted in expressing what they *think* they know. To these men, Dental Dictionaries and Dental Recorders are but waste paper; and our expectation must be that they will continue as heretofore, wise as *doves*, and harmless as *serpents*.

The man who in these days of enlightenment will not read ought not to be trusted. He has buried his talent in the earth, and though it be covered with gold dust, the crime is none the less. He injures the Profession with which he claims membership, and through his ignorance and presumption scatters pain, misery, and mutilation among those who confide in him.

ANNUAL OF SCIENTIFIC DISCOVERY, OR YEAR BOOK OF FACTS IN SCIENCE AND ART, EXHIBITING THE MOST IMPORTANT DISCOVERIES AND IMPROVEMENTS IN MECHANICS, USEFUL ARTS, NATURAL PHILOSOPHY, CHEMISTRY, ASTRONOMY, MINERALOGY, &c., &c. Published by Trubner & Co., London, and Gould & Lincoln, 59 Washington-street, Boston.

Some men, having this little book in their pockets, could afford to go with their *heads* empty. It contains a larger collection of interesting, instructive, and important facts than any work of its size we have met with lately. There are to be found in its pages many descriptions of improvements and discoveries that can be made available in the mechanical department of our practice; and the book as a whole is worthy of its title. We should like to see a little finer paper, and a good deal coarser type; but the price of the work forbids the improvement. For our own part, we would at any time prefer depriving our pockets of an extra dollar to squeezing *half* that amount out of our eyes.

New-York Dental Recorder ;

DEVOTED TO THE THEORY AND PRACTICE OF

Surgical, Medical and Mechanical Dentistry.

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CRYSTALLIZED GOLD.

The preparation known as crystallized gold is becoming quite a subject for discussion, and we predict that the time is not distant when the discussion will assume a decidedly controversial aspect. There are two sides at least to every question ; and those who advocate the utility of the new preparations have no reason or right to suppose that they can settle the question to every body's satisfaction.

Our experience in the use of these preparations is an extensive one, and we must say that our convictions as to the usefulness of this form of gold for filling teeth are decidedly favorable ; though in making this statement we would by no means desire to be understood as advocating its immediate or indiscriminate use by all or any of our readers.

We have yet to see the operator who fills teeth intuitively, or the man who has done any thing else requiring great care, delicate manipulation, and discriminating judgment, without *some* previous labor and preparation, and certainly these are all requisite to the proper performance of even the most trivial dental operation ; but, with these requisites, accompanied by a due proportion of patience and perseverance, most astonishing results can be produced with the article in question—results that we do not hesitate to affirm, and can most readily and *practically* prove, cannot by any possible combination of skill, labor, or thought be attained with gold foil. This may seem a bold and to many an almost incredible statement, but the proofs can be

made visible ; and those who are not prepared to believe our words must be prepared to disbelieve their own eyes.

To produce such results, however, *does* require skill and labor—skill that any one competent to practice Dentistry can attain, and labor that all such should be willing to bestow upon their operations. Those who desire to shirk either of the above must not depend upon this form of gold for their salvation. It is true that in the performance of certain operations an amount of time and labor can be saved that will readily be appreciated, and it is equally true that in certain other cases the time and labor may be the same and the amount of skill required be no less than though foil were used ; the gain being in the utility of the operation. But before entering upon the “modus operandi” of filling teeth with crystallized gold, we purpose to say something relative to the material itself.

The first question that naturally arises in this connection is regarding the purity of the article, and we can only reply as we could if the question were asked relative to gold foil, viz : that if properly prepared it is pure ; indeed the assay made at the United States Mint of specimens furnished for that purpose by Prof. Townsend, shows that it can be made even purer than what is there considered or passes for pure gold, and being in this respect superior to Abbey's foil, which as foil we believe stands unrivalled.

We presume that all are more or less acquainted with the process of preparing the crystal gold. (The caveat filed in the Patent Office, by J. A. Watts, was published in the Recorder some two years since.) We believe that the same principles are applied in the manufacture of all the varieties, (“their name is legion,”) and that the differences in texture, properties, &c., are merely the result of variations in quantity and manipulation.—It is obvious to any thinking person that unless the process is conducted throughout with the greatest care and skill, the manufactured article is likely, from the very nature of the materials used, to prove anything but a proper substance for filling teeth. Hence the necessity of discarding, at once, any preparation of doubtful appearance, or from a dubious source. In this respect we have in our own practice been “particularly blessed ;” nevertheless we have had some few unpleasant and mortifying, though

not irremediable, results ; and we consider it a matter of simple duty to make these facts known, in order that the Profession may profit by our own experience. We believe that the dangers to be apprehended from impurity are simply those that would result from inexperience or carelessness on the part of the manufacturer. In the first place, there may be a trace of the mercury remaining. Should this be the case, it will, during the process of condensing the gold in the cavity, be forced out and occupy a position between the filling and the dentine ; in process of time the tooth will be found discolored, and upon removing the plug, a fine blue-black powder will be found in the position described ; this powder can be readily removed by rubbing with moistened soft paper. I have in no case been obliged to remove dentine in consequence of an accident of this nature. In the second place, the acid used to remove the mercury may not have been sufficiently neutralized or washed out ; this can usually be detected at once by the discoloration of the instruments used, and also by a blueish appearance of the tooth, the latter continuing to develope itself until the acid forced out of the filling becomes neutralized, which usually takes place in a few hours, and then is productive of no further mischief—an important fact, but not mentioned here as affording any excuse for allowing the operation to remain. Thirdly, we may find remaining a trace both of mercury and acid ; in such a case the tooth will be stained, and the injured dentine will of course have to be removed.

We believe, however, that defects are more likely to occur from impurities contained in the quicksilver used than from any other cause, bismuth, lead, and tin being usually found in combination with that metal as it is usually sold, and, of course, unless thoroughly purified there would be more or less danger of unpleasant results. We may as well state here, that during an experience in the use of these preparations of gold that but few have had thus early, we have met with but one specimen that contained objectionable accompaniments. The specimen alluded to was sent abroad by the manufacturer's assistant during the illness of the former, and before the gold in question had gone through all the necessary processes. Of course this was purely an accident, might never again occur, might occur to-morrow. Dentists might as well say they will not employ a man who *may*

die, as to say they will not employ one to whom an accident might occur, or has occurred. Out of over one hundred and fifty packages of crystallized or sponge gold that we have used, including some thirty different varieties, the above is the only one to which we have traced the evil results alluded to; and all the trouble we have ever known as proceeding from the use of crystal gold could be traced either to this one lot, or another of a different variety, both of them having been in the market at the same time. We wish it to be distinctly understood that we allude solely to trouble arising from the use, not the abuse, of crystallized gold.

I mention these facts not because they are likely to occur, but because they have occurred and may occur again. It may, and doubtless will, be asked, what guarantee have we that the preparations offered are pure and reliable? It can only be said in reply that we must rely upon the reputation of the manufacturers for producing pure gold, and upon our own resources for testing that which we may consider doubtful. The writer of this has frequently seen gold foil fillings that were badly discolored, both inside and out, so much so as to materially affect the appearance of the teeth. We are at this time operating for a patient who applied to us a short time since for the removal of ten fillings in the anterior teeth which had, in consequence of such discoloration, rendered her otherwise beautiful teeth disagreeably conspicuous. These fillings were found to be hard, solid and smooth; had evidently been well put in and properly finished, but, upon removal, the oxidation was ascertained to have stained the tooth substance, and in each case it was found necessary to remove more or less discolored dentine, some of which was too near the color of verdigris to leave any doubt as to the nature of the alloy left in the gold foil. Of course we had no means of knowing whose *foil* had been used in this case, but we felt it our duty to express our conviction to the patient, that it was, so far as the operator was concerned, a misfortune, not a fault, for the man who would bestow the time and labor that had evidently been spent upon these operations, would never have used an inferior article of foil for the sake of saving the difference in the cost. We have seen many similar cases, and who has not?—

We would only ask—How much weight an argument against the use of *foil* would have if based upon such an accident as this?

We doubt not that almost innumerable instances can be cited where crystallized or sponge gold has been used unsuccessfully, where the fillings have come out, or crumbled away, or softened, the teeth dark colored or decaying. But we dare assert that in almost every case so named, there has been either imperfect knowledge of the material used, imperfect instruments, or imperfect manipulation, and in very many cases all combined. How many similar results, from similar causes, do we find where foil has been the material so desecrated? What kind of an argument would this be against the use of gold foil! Precisely such an argument as it would be against the use of crystal gold. An argument fallacious in the extreme. A *thousand* such would be dispersed by one successful operation.

We hope the profession at large will weigh these truths well, for they are truths, and can be demonstrated. The man who will deny a fact, or condemn a principle, simply because an illustration of it has failed through faulty manipulation, must necessarily be a man of weak judgment. We do not wish to be understood as applying the above to all who oppose the use of the material in question. Some of our best personal friends, and many who stand deservedly high in the profession, have slightly passed it by as unworthy of notice: others speak only to condemn. We truly believe, and we say it with all due respect, and with truly fraternal kindness, they are in error. There is good in crystallized gold, and you can all do good with it. You can benefit yourselves and your patients. It places power in your hands of benefiting the public that dentists never had before; but this power is to be acquired by degrees. The more skilful you are in using foil the better, for the quicker will you gain strength, and the greater the strength. It is said that "knowledge is power," but the ignorant and unskilful friends of the new preparation can abuse the article more than its *wisest* enemies.—Failure is but a negative proof; success is affirmative, positive, unanswerable. We have yet to know the man who *never fails*, no matter what his profession or his practice. The more he boasts of invariable success, the more he is to be doubt-

ed. We have yet to see a perfect human work ; and, when Dental Surgery becomes a perfect science, we'll

"Call it God,
And worship at its shrine."

[TO BE CONTINUED.]

PROBABLE CASE OF POISONING FROM A SLIGHT ABRASION BY THE THUMB NAIL.

BY W. D. MAULL, M.D., GEORGETOWN, DELAWARE.

The impression of the poisonous nature of the nails of the fingers and thumbs, has obtained with many outside the profession, and plausible cases occasionally arise which favor strongly the received impression, though it is difficult to conceive in what manner these horny appendages of the skin, in their formation identical with the epiderma, can by wounding any part of the body, convey into the system a poison which shall manifest itself generally over the surface. But notwithstanding this view, in our practice we have met with a case which we can reasonably attribute to no other cause than an abrasion or scratch from the thumb nail.

The case we refer to was that of a young girl, æt. about four years, who in the act of being fondled by her father a day or two before his death, which resulted from consumption, received a slight wound under the lower eye-lid, from his thumb-nail. Her relatives stated that the wound soon began to inflame, and that an eruption gradually spread itself. She had been thus affected for about a year, when our attention was directed to the case, one or two physicians having previously seen it and prescribed. We found the poison manifesting itself profusely ; there being an eruption thickly spread over the face, and at times upon the hands when they were brought much in contact with the virus. Her eyes had been closed for a period of about two months, she being unable to open them, on account of the secretions being so abundant and vitiated as to clog them. There was an almost constant discharge from the nose, of a matter resembling that from the Schneiderian membrane in the resolving stage of a

catarrh; no disposition for sport with other children; languid; seldom spoke except when interrogated; forming, upon the whole, an exceedingly sad spectacle of physical suffering in a child.

Treated her somewhat upon the homœopathic principle—that of *similia similibus curantur*: prescribed two drops of liq. potass. arsen., per die, and directed the eruption generally to be anointed with the ung. hydrarg. fort., and in addition ordered some laxative medicine. In the space of three weeks the child had almost completely recovered.

It may be well to observe that the possibility of the child's coming within the sphere of the influence of the *Rhus Toxicodendron* or poison oak, was precluded by her age and other attendant circumstances, though there are many persons who are very easily affected by this shrub, the properties of which manifest themselves very abundantly at times.—*New Jersey Medical Reporter*.

A CASE OF POISONING.

BY M. A. MILNER, M.D., OF FAIRFIELD, TEXAS.

The comparatively rare occurrence of poisoning by hydrocyanic acid, or preparations containing it, as cyanide or cyanuret of potassium, is admitted; yet it does sometimes occur, and this induces me to report the following case, with the hope that it may elicit further inquiry for a certain antidote, and the proper management of such accidents.

On the 6th instant, (October,) Col. W.'s little daughter, Fanny, three years old, in company with others, visited a daguerreian gallery, in the second story of my office. While the artist was preparing a plate, one of the ladies gave the child (for water) a solution of the chloride of silver and cyanide of potassium, used to galvanize plates. The mistake was discovered immediately, and the child brought into my office, with the cry,—“Do something quick! it is poisoned with the chloride of silver.” One glance revealed to me the truth of the alarm. Her face was

flushed, her breathing slow and stertorous, and she was apparently insensible. With all possible haste, I tried a mustard emetic, but found she could not swallow, and immediately resorted to the stomach-pump, and succeeded in drawing off a good portion of the fluid contents of the stomach. It being a short time after dinner, however, the imperfectly chewed and undigested bits of meat, &c., would fill the eyes of the tube, and prevented as effectual an emptying of the stomach as was desired. I then forced salt water into the stomach, but to no purpose, for the child was *dead*.

The length of time from the drinking of the poison until the last gasp for life was between four and five minutes.

None of the antidotes, as laid down by authors, were used, such as chlorine water, ammonia, cold water, &c.

In conclusion, I would respectfully ask, where such prominent poisons are taken, and the paralytic effect on the nervous system so instantaneous, should emetics or the stomach-pump be thought of for relief? or should we depend on inhalations and the administration of antidotes?

The composition of the poison was about 3jv. cyanide potassium; 3j. chloride silver, and three pints of water.—*Southern Medical and Surgical Journal*.

DIFFICULT CASES OF EXTRACTION.

BY DR. JAMES TAYLOR.

The series of articles by Dr. C. T. Cushman, headed "*Practical Thoughts on Tooth Drawing*," the last of which we give in this number of the Register, bring to mind several cases of similar character; and as we regard the detail of practice as of the first importance to the Profession, we have concluded to give a few of these cases as rather in connection with Dr. Cushman. With Dr. Cushman, we regard the Key, at times, and in certain cases, as an invaluable instrument, and we fear that, at times, much unnecessary pain is inflicted by some in the Profession, merely because they regard it unprofessional to use this instru-

ment. We now give a case in point. Some few weeks since an old patient called on me with violent pain in the first molar of the left side Inferior Maxillæ. From the nature of the pain, and the appearance of the tooth, I soon perceived it to be a severe case of Periodontitis. On examination, I found the tooth much decayed, and on its palatal face, broken down to the alveolus, positively affording no resting place for the inner beak of the forceps. The labial portion of the tooth appeared tolerably strong, and with my gum lancet I thoroughly tested its density by cutting and scraping its decayed portion. When I had thus satisfied myself of its true condition, I remarked, "I thought I could remove it with the key without any difficulty." To the use of this instrument she stoutly objected; and as I had fully set my thoughts on the key or nothing else, I demurred to the use of the forceps. Thus we separated. The subsequent history, as I had it from a friend, was, that she went to an experienced operator of this city, and with the first application of the forceps he broke the tooth, and after many repeated efforts, consuming half an hour, the roots were removed, but not until the lady had fainted. She was taken home in a carriage, and did not leave her bed for several days.

This tooth, it may be said, might have broken with the key, and so it might, yet, in my hands, I know that the key would have been the safest instrument. This was a case where I regard the key invaluable. I can not, however, agree with Dr. Cushman in the application of the key to the root of the cuspid tooth, as reported in case No. XV, and also that of case No. XVI. For such I use the forceps—beaks, lancet pointed. That instrument which most expeditiously, easily, and certainly removes a tooth is the best. Yet it must be remembered that use and tact will make an instrument in the hands of one operator far more effectual than in the hands of another.

I believe with Dr. Bridges, that "we sometimes encounter teeth that we can not by fair means remove," and yet we may by foul. The history of the following case is illustrative, and we leave our readers to decide by what means success was obtained. Mrs. S——, about two months since, came into my office with a very troublesome left dens sapientiæ. The tooth wanted room for eruption, and although nearly through, pointing slightly out-

ward, yet it had carried so much of the soft parts up with it that every effort at occlusion of the jaws, these parts came in contact with the tooth above, and thus inflammation set in. The face was much swollen, and the mouth could not be opened so as to reach the tooth with a proper forcep. The tooth had been ineffectually tried before she came in. This had not effected a loosening of the tooth, yet increased the pain and swelling. With my elevator (Physic's) I loosened the tooth and slightly raised it in its socket, then with an elevator of a different kind applied between this tooth and the posterior molar, I forced the tooth backward and upward until two lines at least of space was obtained between these teeth. I then applied a curved hawk's bill forcep, and made upward and outward traction. But, from the impossibility of making a proper application of force backward, the effort was unsuccessful; the tooth merely slipped back into its old position. The same operation, with elevator and forceps, was renewed again and again, and every other means tried which seemed possible, and although the tooth became so loose that it could be moved backward and inward, and outward a little, yet it would *not come*. After half an hour's hard labor, we both concluded to quit.

The loosening of the tooth abated the violence of the pain, and I told her *that, I thought*, in a few weeks the tooth could be removed.

November, 1854—Mrs. S. called, and on examination I found the soft part, which had so much covered her tooth, removed by the suppuration which had taken place around her tooth; the swelling had in a great measure subsided, and she could open her mouth a little wider; yet she has suffered more or less ever since I first attempted to remove her tooth. On examination, I found the tooth firmly set. But, as I supposed the processes must be partially absorbed, I told her, "*I thought*" I could remove the tooth, and set the next day to attend to it.

November, 1854—Mrs. S. called, and with the elevator (Physic's) I loosened her tooth, and raised it almost on a line with the posterior molar. I then applied the hawk's-bill forceps, and made outward and upward traction. The tooth resisted all the force I dare apply. I then, with the curved bar elevator, applied between this tooth and the posterior molar (making this

and the alveolus as a fulcrum for my lever), tried to force the tooth backward and upward. This was effectual in only gaining a little more space between the teeth, and raising the tooth very little. I then applied the same forcep again, but the tooth moved not. I then tried my curved root forcep, but the mouth could not be opened wide enough to thus reach the tooth. I then applied my straight root forceps, and by grasping the tooth obliquely, I made inward and outward traction. The tooth in the mean time raised so much that the mouth could not be closed.

I re-applied different forceps again and again, and shook, and "wrenched, and turned" the tooth in every possible way, and yet the tooth refused to leave its socket. This was continued until my arm gave out and required rest as well as my patient. The fact is, we both felt disposed to quit, but the mouth could no more be closed, and it became necessary to force the tooth back into its place or take it entirely out. I concluded to make one more effort to remove the tooth, and crossed the street to the dental dépôt of Dr. J. M. Brown, to see if I could find among his extensive assortment a pair of forceps which would grasp the tooth more favorably than any I had. I selected one which is small in the bar, and not so much curved as those I generally use for the lower teeth, and which I thought would allow me to make more powerful traction inwardly than the straight pair I had used. Fortunately, the rigidity of the muscles had somewhat given way, from the long strain upon them in my efforts to remove the tooth, and I was enabled to grasp the tooth with this forcep, and after a great deal of traction inward, and outward, and upward, the tooth came out. I never *labored* half so much on any tooth as this. The roots slightly curved backward, as I anticipated, but they were not only twice as large in diameter as I supposed, but they were also very much lengthened by exostosis. I know not now how I could have extracted the tooth any better. With any ordinary patient, I never should have succeeded. She has just that courage which appears now so necessary in the siege of Sebastopol.

Only a few days before this operation I had one of a like character, except that the roots were not enlarged by exostosis, and was removed by three or four efforts with the elevator and for-

ceps, but which had withstood the most strenuous efforts of the forceps, unaided by the elevator.

I give another case of dens sapientiæ, which forced me into a different mode of practice. During last winter, a gentleman of Fulton called with severe pain in the neighborhood of the right inferior dens sapientiæ. On examination, the teeth were sound and very firmly set. The integuments around the teeth had commenced to swell, and some rigidity of the muscles existed, so as to prevent the mouth from being well opened. The anterior cusps of the dens sapientiæ pressed against the neck of the posterior molar, and the large and bulging crown of this tooth appeared to pinion the former to its place; the pain and general symptoms indicated a protracted case of alveolar abscess, resulting from pressure, and, owing to its location, one of the worst character. No certain remedy could I prescribe but the extraction of the tooth.

I first applied Physic's Elevator, but it failed to raise the tooth; and, indeed, from the position of the teeth, I feared that I was merely forcing the tooth back into its own socket. I next selected my curved bar elevator, and tried to force its sharp point between the posterior molar and the offending tooth, but it was impossible to get below the crown of this organ.

Here was a dilemma. Yet there was one method of relief, and this, with the consent of my patient, was speedily adopted. I took out the posterior molar, and then with a hawk's-bill forcep extracted the dens sapientiæ. This I removed because of the inflammation in its socket, and because it presented its posterior face, instead of its grinding surface, to its antagonizing organ. Here was a case where the pressure could not be relieved by the file, because it was below the gum. I believe it was the first and only case where I have had to take out the posterior molar tooth to remove the dens sapientiæ.

The following case, I presume, would have been treated with the turnkey, by Dr. Cushman, and, I have no doubt, successfully; but I dislike so much to apply the fulcrum externally that I determined to try the forceps.

A lady of Covington, some two weeks since, was sent to me by her physician, who had broken the anterior left inferior molar, the decay having taken place on its labial face, and it broke on this

side down to the level of the alveolus, leaving a firm portion above the alveolus on its palatal face. She had endured so much pain in the trials to extract the tooth, and the pain became so severe that she determined to take chloroform and have it out. I administered chloric ether to anesthesia, and with my left inferior molar forceps (made with a beak to pass between the roots) I grasped the gum and alveolus over the union of the roots, on their labial portion, forcing the inner beak of the forceps low down; with an inward and upward pull—the edge of the process I had enclosed chipped off, and the roots both came out. The amount of gum removed was not half equal to that which would have been bruised and torn up by the fulcrum of the key.

THE USE OF THE GUM LANCET.

The following case shows the use of the gum lancet, and how easily one dentist may give up a patient to another: A few days since, Mrs. B—— called with violent pain in the posterior superior bicuspid of the left side. She had been the day before to her dentist to have it removed, but on examination he found it a mere shell, and broken to the gum on its lingual face. The prospect for extraction looked bad. He filed off the outer portion to the gum, and told her it should not be removed until after abscess formed, as he would have to cut away the process, &c. After a wakeful and restless night, she called at my office and wished to know if I could take out the root. I told her I thought it could be extracted. I have a pair of gum lancets which are made slightly concave on one side and convex on the other. They are thus adapted to the roots of the teeth, somewhat as the forcep blades are. In lancing the gum, the point of the blade is forced a little into the socket, and, by a leverage force, the root is often loosened, and space is made for the point of my forcep blades—and these should be made very slender and sharp at their points. In this case, after the gums were thus cut, and the root slightly moved, I applied a root forcep, and, by carefully *shaking* the root, it gradually raised in its socket until I felt at liberty to close my forcep enough to permit traction to be made on the root; but this effort, in this instance, broke in the lingual portion of the root, but not, however, until it was so much loosened that I could, by using the outer beak of the forcep as an elevator, remove

the root. A little tact in this way—changing the mode of using an instrument—will often insure success, when failure otherwise would be the result.

A case of this kind occurred a year or two since in the Dental Infirmary. I had given the patient chloroform for the extraction of four or five roots, and a superior posterior molar. With a root forcep I had extracted all the roots, and as the effect of the chloroform was passing off, I hurriedly seized a molar forcep, and at the first effort the lingual portion of the tooth broke down to the alveolus. Without the removal of my forcep, I changed the mode of applying force, and pushed the tooth from its socket as with a punch or elevator. Perhaps there are but few of our old operators that are not in the habit of doing the same, yet I name this for the benefit of those just commencing.

I might extend this article in giving difficult cases of extraction; for, like other *troubles*, they have not recently come singly, having had more cases of this kind in the last three months than in a year previous. Three or four years since I had a like run of diseases of the antrum; I think it nearly a year since I have met with a case.

Is it ever best to wait the formation of an abscess before extracting a tooth, if it is at all practicable to remove it before? The reverse has ever been my practice; first, because it is the most effectual method of letting out the matter; and second, although the operation is most painful, yet an *immense* amount of pain is avoided, which almost always accompanies the formation of alveolar abscess, and which must necessarily be endured if the tooth is not removed.—*Dental Register of the West*.

NECROSIS AND EXCISION OF PART OF THE LOWER JAW.

BY R. G. H. BUTCHER, SURGEON TO MERCER'S HOSPITAL, DUBLIN.

M. C., aged 35 years, was admitted into Mercer's Hospital on the 3d of April, 1854, laboring under a train of the most distressing symptoms. The following history of her case she gave from its commencement, through its progress:—

In December, 1853, her husband, when drunk, struck her a

violent blow with his clenched hand on the right cheek and side of the lower jaw; she was prostrated, and remained senseless for some time after; extensive ecchymosis rapidly supervened; high and active inflammation seized upon the part, and considerable swelling, widely implicating the tissues around, soon masked the features. So violent was the shock and severe the primary effect of the injury, that the patient was necessarily confined to bed for several days, during which time very active treatment was resorted to. The most urgent symptoms demanding attention at this time were inordinate swelling, and inability to open the mouth, arising from total paralyzation of the muscles of mastication.

By active local depletion, lowering the system by purgatives, &c., the extension of inflammation was checked, while its destructive consequences upon those parts implicated from the first were not to be averted, and could not be stopped; a dead heavy pain fixed in the jaw-bone corresponding to the stricken part, and this for many weeks, night or day, never ceased. Towards the termination of the ninth week a large abscess formed beneath the angle of the jaw, which was opened, and a quantity of matter discharged; *this*, looked upon by the sufferer as *critical*, afforded no relief—no cessation from the burning pain in the bone—no increased power over the muscles of the locked jaw. Shortly after, nature effected an opening lower down in the neck, through which the fetid discharge flowed in abundance, and by which two or three small pieces of bone escaped; about this time, too, the molar and bicuspid teeth became loose and elevated from their sockets, and shortly after fell out, but without being followed by any amelioration of suffering. Violent, fixed pain settled in the articulation and ramus of the jaw on the affected side; most severe about three weeks before her admission to Hospital. At this time I first saw the patient; upon examination it was evident that necrosis was accomplished from the condyle to the symphysis menti on the right side; the condyle and the neck of the bone were apart from the rest; these were loose, and afforded crepitus upon the slightest motion; nature accomplished the loosening of them, but was too tardy in their removal: intense suffering, loss of rest, alarming emaciation, called for more speedy relief—demanding the interference of the surgeon. By

detaching the cheek from the maxilla through the mouth, I was enabled to seize with a forceps the portions of bone alluded to, and effect their extraction; the condyle had separated from the inter-articular cartilage, and also left behind its cartilage of incrustation. At this time I did not think it necessary to remove the remaining portion of the deadened bone; a substitute was being formed, and I did not think it prudent to interrupt a process rapidly being accomplished towards repair, without any pressing or urgent symptoms.

For some time relief was afforded, and all distressing symptoms removed by the extraction of the head and neck of the bone, but unforeseen circumstances soon called for more decisive and severe operative measures—the removal of the entire deadened part. Shortly after the above date, the patient was hurried to hospital, on account of the alarming symptoms created by the starting of the sequestrum from its bed posteriorly; it projected remarkably towards the pharynx, and created violent spasms in the muscles of the region, together with a total incapacity of swallowing softened solids; and so materially were the functions of the part interfered with, that several short and repeated acts of deglutition were necessary before a spoonful of fluid, or even the saliva, could be got down. By this displacement of parts the function of respiration was likewise materially embarrassed, the number being irregularly accelerated, sometimes prolonged, at others short, ringing, and terminating in spasmodic cough. The alarming train of symptom just detailed could fairly be ascribed to the pressure exerted upon the pneumogastric nerve and its branches by the displaced sequestrum, therefore the imperative necessity for its removal. Such being my opinion, I endeavored to extract the bone through the mouth, but failed in doing so, owing to the close manner by which it was wedged in by new parts, and surrounded with healthy structures; it remained firm and immovable. This deadened portion of the bone was very extensive, including the angle and ascending ramus, together with the side of the maxilla, close to the symphysis. Being foiled in the simple way, I was compelled to incise the cheek after the manner requisite for excision of the lower jaw, proceeding as follows:—

The head being steadily supported, a perpendicular incision

commencing in the medial line beneath the red margin of the under lip, was carried downwards beneath the chin; a second, commencing at the angle of the maxilla, was carried forwards along the lower border of its side, and made to meet the termination of the vertical one; a ligature was next cast round the facial artery and tied. The flap was then rapidly dissected up, the knife being at once thrust through the mucous membrane, and the cavity of the mouth fully exposed; the dead bone was then grasped in a strong forceps, and being liberated from the parts around, was wrenched from its bed. Some smart hemorrhage followed, from the violence inflicted on the reparative material thrown out; however, dossils of lint and dry sponge, aided by pressure, were effectual in its suppression. The flap was next laid down and maintained in its position by two points of the twisted suture in front, and by several of the interrupted, in its longitudinal axis. Immediately after the operation the patient fell into a quiet sleep, which lasted several hours, and when she awoke partook freely of drink and softened food, without any uncomfortable sensation whatever. She made a very rapid recovery, the wounds healing nearly in their entire extent by the first intention. All through the after treatment it was necessary to keep the jaw pressed over towards the affected side, and well supported by means of a gutta percha splint moulded for the purpose; this effectually counteracted the muscles on the sound side from dragging the bone in that direction; which they were prone to do ever after the solution of continuity in its structure; by the adoption of this simple expedient, until the newly-formed substitute had acquired sufficient density to resist, all deformity was averted, and the symmetry of the face was preserved.

Four months have now elapsed since the operation, yet there has been no attempt at ossific deposition. A fibro-ligamentous structure, dense and firm, occupies the space corresponding to the removed bone: this, too, shaped in close similitude to the part taken away. The patient possesses the power of opening the mouth to the full extent, and closing it perfectly, and so admirably has the mechanical means employed fulfilled the indication of preventing any lateralization of the lower jaw, that the inferior incisors lie evenly beneath the upper, holding their relative relationship each to the other.

It is an interesting point of conjecture how the articulation is

circumstanced while permitting the freedom of motion referred to. From a close and attentive conception of the prominent pathological changes, I am of opinion that the original incrustating cartilage of the condyle has been, as it were, engrafted upon its substitute, such an arrangement still further insuring the proper attachment of the external pterygoid muscle, through the intervention of the inter-articular cartilage and perforated capsule.—*Dublin Quarterly Journal of Medical Science.*

THE VALUE OF ATMOSPHERIC PRESSURE PLATES.

Two years since, a young lady about twenty years of age, and of a very nervous temperament, but apparently in good health, broke out both superior front incisor teeth, in the following singular manner. She retired as usual, but from some unknown cause, she either awoke suddenly in a frightful dream, or in a nervous paroxysm, and precipitated herself out of bed over the foot board of the bedstead, and either striking her teeth against the top of the board, or falling with her face on the floor, met with the injury above described. All the upper teeth of this patient were sound and beautiful, and how to supply, successfully, the place of the lost teeth, without the usual injury to the adjoining ones, was a matter of the greatest importance. We constructed an operation with Gilbert's central cavity, and it has been worn with perfect comfort up to this time. The operation answers every purpose in the functions of mastication and enunciation. If this accident had happened a few years ago, the teeth, probably, would have been filed apart and bands applied, and before this time several more teeth would have been added.

A case of similar character occurred to a young lady, about ten years ago. She lost, by accident, the left superior front incisor tooth. She applied to one of the most eminent dentists of our city, who attached the operation to the first bicuspid; in a short time, these became so much decayed, as to make it necessary to remove the bands to the second; and in due course of time they also became badly decayed, when the bands were removed to the first molars—these also became affected. She applied to us to have them plugged. We advised her to try the central cavity plate, which was adopted; there has no fresh decay taken place in those teeth since. The case is worn with entire satisfaction.

We could cite a great number of cases of this order, where the central cavity has been of great value to the patient; and we think that the dental profession is very largely indebted to the inventor, for bringing it so fully before the profession; and it is also a matter of surprise, that it is not more generally employed by dentists, for supplying partial sets of teeth.—*Dental News Letter.*

EDITORIAL.

We would call especial attention to the advertisement of Joseph Hill, "Electro-Plater." His testimonials offer very satisfactory evidence that instruments plated by his process wear well, and their injury by moisture is effectually prevented. Although we do not object to "*diminished labor* in cleaning instruments," we must always advocate the greatest care in keeping them thoroughly and perfectly clean. Dentists' instruments should never be made like the old woman's cups and saucers, "so that they won't show the dirt."

In all jointed or double instruments such as Forceps, Scissors, &c., which are liable to rust, owing to the difficulty of thoroughly drying them, the above-named process is really a very great improvement.

We are printing large editions of the first two or three months, and we request all who receive copies, and wish to continue receiving, to enclose the necessary \$2 00 to us at an early day, to ensure getting a complete volume. Some of our subscribers having declined to pay for the last volume, on the ground that they were not liable beyond the year in which they commenced, we desire to say that such is not the customary rule, subscriptions being considered in force until *ordered* discontinued.

IMPROVEMENTS.—To the Members of the Dental Profession, and those engaged in the fabrication of articles used in the practice of dentistry.

The undersigned, chairman of a committee appointed by the Mississippi Valley Association, to meet and report improvements made during the current year, appertaining to the practice of dentistry, so far as the same may be made known, together with the names of the inventors or discoverers, is desirous of corresponding with those gentlemen who may have made any improvements they consider worthy of note, or discovered principles or things worthy the attention of the Association. If the improvement is instrumental, or the discovery or principle is of such a nature as to be illustrated by specimens or drawings, these should accompany the description.

Specimens and illustrations will be preserved in the Society's Cabinet, or returned if preferred.

The period for making the report is the 20th of February, 1855. Communications should reach here before that time.

A. M. LESLIE.

Cincinnati, December, 1854.

BOOK TABLE.

FACTS FOR THE PEOPLE, relating to the Teeth, showing their influence upon the Health, Speech, and Looks, with directions for their Care and Preservation. By F. D. Thompson, D. D. S., of the Baltimore College of Dental Surgery.

Unquestionably the most practical way to elevate the standard of professional requirements is to create a public demand for the scientific and skilful. No matter what the profession may be, if the public are determined only to employ those who are truly and deservedly eminent, the ignorant and pretending must be forced into "outer darkness." It is equally incontrovertible that the *only* way of bringing about this much-to-be-desired end is to educate the public, at least so far as to enable the "dear people" to discriminate between the sheep and the goats, and if possible to teach them the art, science, and mystery of detecting a wolf when in sheep's clothing—an ignorant pretender, destitute of every thing but diplomas and impudence. Dr. Thompson certainly deserves the thanks of the Profession, as well as of the public, for the effort he has made in this direction. This book contains a vast deal of information that will prove valuable to its readers, and we hope it will have many.

The book is made up almost wholly of extracts from other works. It is, in truth, merely a compilation of such "facts" as we presume the author thought "the people" needed. All of these "facts" we cannot at present endorse. We have neither time nor space to refer to these more particularly, but feel compelled to advise the author and his "people" to try that remarkable and powerful mechanical preparation of steel (without comment of any sort) known as "Forceps," *previous* to testing the treatment described on pages 213, 214, 215, and 216.

We believe there is nothing original in this book, if we except some few specimens of twisted English with which its pages are occasionally variegated, and which furnish refreshing evidence that the work is not *done* by a regular book-maker. Truly a luxury this.

THE ANATOMY, PHYSIOLOGY, AND PATHOLOGY OF THE HUMAN TEETH, THEIR TREATMENT, &c., &c. By Paul B. Goddard. Published by S. S. & W. Wood, 261 Pearl-street, New-York

This is a re-publication of a work that has been a long while before the Profession. The manner in which the practical part of our art is treated savors strongly of the days of "auld lang syne." As a general guide for the dental *practitioner*, the work could not be made of any great value. With regard, however, to the Anatomy, Physiology, and Pathology of the teeth we can speak of its merits. The greater part of the information given in its pages relative to these most important departments can at this day be considered orthodox; and we believe it is now one of the best illustrated works (in this respect) that pretends to treat of Dental theory and practice. The cuts illustrating the anatomy and physiology of the teeth are alone worth more than the price of the work; and the cuts illustrating the instruments used, and the manner of using them, are at *this day* quite as interesting, and some of them as *amusing*, as those first spoken of are valuable.

THE FORCEP: A Quarterly Journal, devoted to the advancement of Dental Science. Published by the New-York Teeth Manufacturing Company.

The first number of volume 1st of this Journal made its appearance last month. Our guessing apparatus authorizes us to say, that Dr. Solymán Brown is its editor. We believe it is *customary* upon the appearance of a new journal of *any kind* for

those who make public mention of the fact to compliment its publishers upon the disinterested liberality with which they have gotten up the publication—to speak favorably of its type, its paper, its contents, &c., &c. As our book notices are not stereotyped, we have full liberty to vary the tale to suit the facts. So far as the general appearance of the *Forcep* is concerned, we will only say (and that by way of encouragement to its publishers) that we honestly think they have left plenty of room for improvement. Of its contents we have only time and space to note the following, from the pen of the “medically educated” Dentist. Speaking of salivary calculus, he gives the following to the great unenlightened:

“It is generally deposited, as I have heretofore mentioned, upon those teeth of imperfect combinations of their constituents, and rarely, if ever, if we except a sediment thrown down, consequent upon the abnormal secretions, superinduced by ordinary “indisposition,” or in larger collections in the confirmed diseased. Disease, as particularly perceived in *phthisis pulmonalis*, increasing the exhalation of acid and alkaline matter, their combination precipitates and forms these concretions or a corroding acidified matter upon the teeth, according to the one most in excess and which is not to be seen upon teeth of a healthy constitution and habits, where the healthy secretions are preserved. It collects in great quantities in strumous and rickety children, and from the readiness of the saliva to become putrid, we find the acidified matter eating into and destroying the teeth. In aphthous and teething children, this is a great cause of local and constitutional irritation; and I have no doubt that it is one cause of the bronchial irritation and sympathetic cough superinduced by the immense quantity of glairy mucus exhaled from the bronchial cells, consequent upon a sub-inflammatory action either from a metastasis of action, or physiological cause, as we daily observe in extensive superficial burns. In mothers of strumous diathesis, whilst nursing, tartar accumulates in large quantities, or canker sores afflict the mouth, and a filthy, acrid, corroding green acidified matter occupies the place of the tartar, which “eats” into the enamel and bone of the teeth, which renders them so exquisitely painful as to be nearly useless for their intended purposes.”

“In the increased secretion of saliva in teething children, who shall say that the “dribblings,” by which it is generally known, and which are considered by the nurse as a good “sign,” do not discharge an important office in conveying to the absorbents and secretive powers the quota of lime so necessary to the formation of the teeth? The substance of the buccal mucus membrane, developing, as it does, the large and numerous openings into its substance, its close contact, and identifying itself so intimately with the *alveolo-dental periosteum*, which originally formed the sacs containing the germs of the teeth, the absorption, then, of the lime, I think, may accounted for, and the absence of salivary calculus, upon the teeth of healthy children, and its presence upon those whose secretive powers are injured by trashy, indigestive *unnecessaries* with which maternal fondness crams their progeny.”

The first part of this extract gives us a combination of big words and bad English that would astonish the “Spirits.” Of the latter portion, it is but justice to say that the style accords with the subject, being simply “dribblings.” We came near forgetting to state that the charge for the *Forcep* betokens a correct appreciation of its merits on the part of the enterprising publishers, the retail price being nothing, with, we presume, the usual discount in favor of those who take a quantity.

THE DENTAL MONITOR. Vol. 1st, No. 1. Published Quarterly. Edited by J. G. Ambler, “M.D.” Dental Surgeon.

We have always given the editor of the above credit for an amount of wisdom seldom attained by man, and never departed from by the “rest of creation,” namely, the wisdom of playing the part nature intended. Dr. (?) A. has been for some years quite favorably known in this city as the editor and publisher of a blank book (“Ambler’s Dental Record,”) so flattering has been his success in this particu-

lar branch of Dental literature, and for which he is so eminently qualified, that we cannot but regret this his first *attempt* to stray from his "natural bent." Vain effort! In the "Dental Monitor," *still true to nature*, he merely opens to the public eye a blank book of another and vastly inferior character, viz—"The book and volume of his brain."

The following extract so fully illustrates the *aim* and *tenor* of the "Monitor" as to require no comment:—

"Prepare for *Dr. (?) Ambler*,
You wretched, ruined rambler
From Dental truth,
Rude, rotten, raging, frightful.
Malicious, fierce and spiteful
Aching tooth!"

The claim of the above, not too modestly set forth, of rank as Dental Quarterlies, compels reluctant notice.

Believing that the best way to abash or expose any barefaced humbug, is to "pull up it's dickey," and let the public see how the thing is put together, and wherein its hidden merit lies (if it does lie), we have contented ourselves with simply making extracts from their own columns, feeling satisfied that their own words will choke them quicker than any thing else.

C. W. B.

THE AMERICAN MEDICAL GAZETTE AND JOURNAL OF HEALTH. Edited by D. Meredith Reese, M.D., L.L.D.

Our old friend commences its sixth year with a new name and a suit of clothes to match. The former being indeed necessary (so says its editor, and we are able in some degree to endorse the statement), in order to express the national character the journal has attained in consequence of its widely-spread circulation. The manner in which the present number is gotten up is decidedly creditable, and more could, if necessary, be said of its matter. We take no little pride, as well as pleasure, in stating that the most powerful, as well as the best review we have for months met with in any medical journal, is from the pen of a Professor in a Dental College. V de first article in the January number.

BLANCHARD & LEA'S ILLUSTRATED CATALOGUE OF MEDICAL, SURGICAL AND SCIENTIFIC PUBLICATIONS.

If all medical catalogues were similarly gotten up, medical men would be saved a vast deal of trouble in making selections for their libraries; for this, if for nothing else, the publishers deserve the especial thanks of the profession. Of the books named in the catalogue we can with truth say that all are useful, and very many of them invaluable. Of the especial merits of some of these we purpose to speak in the March and April numbers of the Recorder.

WOOD'S CATALOGUE OF MEDICAL BOOKS is on our table. We should judge from an examination of the above, that the Messrs. Wood offered for sale one of the largest and best selected assortments of medical works to be found in the country. We notice among the list the title of numerous works that treat exclusively of Dental Surgery; and upon every page we find the names of books that can and should be made available by the members of the Dental profession. In the future numbers of the Recorder we purpose to mention more particularly some of these works. Those treating more especially of Dental Surgery, Chemistry and Metallurgy, will be thoroughly examined, and their merits and demerits made known. (*Copies of the above are sent free of postage to all post-paid applicants, by Messrs. S. S. & W. Wood, 261 Pearl-street.*)

Cincinnati, January 6, 1855.

Editor New-York Dental Recorder,

In October, 1853, I published a card in the "Dental News Letter," in which I stated "I shall be ready for trial when the case is called;" and, further, that I could imagine the "prosecutor begging the court for further time," &c.

In October, 1854, one year after, during the sitting of the court having jurisdiction in the cause *Allen vs. Hunter*, with my attorney, Judge Matthews, I left Cincinnati on Monday the 16th for Columbus, the capital of Ohio, the place of meeting of the United States District Court for the district of Ohio, for the purpose of demanding a trial in the aforesaid suit, notice having been given the *plaintive*, lamenting, sorrowing, grieving individual, Prof. John Allen, D.D.S., or his attorney, that such would be the case.

On Tuesday, the 17th of October, 1854, my attorney appeared in court and stated his business, and declared that *we* were anxious for trial and wished to have a day set for the trial of the cause. His honor Judge McLean, presiding, stated that the case would not be reached that week, but in all probability would be the following week, and on Wednesday we left for home.

On Tuesday, October 17, 1854, Prof. John Allen, D.D.S., &c. &c., together with his attorneys, Judge Coffin (C. D. Coffin), and Judge Newton (E. Newton, Lawyer), left Cincinnati for the same point for the purpose of staving off the cause of the aforesaid *plaintive*, complaining, lamenting, sorrowing, grieving individual, the aforesaid John Allen, D.D.S., and quondam Professor of Operative Dentistry in the Ohio College Dental Surgeons.

On Wednesday, October 18, 1854, Judge Coffin on the part of John Allen (Prof. &c. &c.), his client, begged "for further time," and it was granted.

It was our right to have a trial at that time if the case was reached; and if a prosecutor coming into court, *before a case is called*, and stating that *he is not ready*, and asking for a continuance, is not begging, what is? It is proven according to Coffin's own *showing*, that the continuance was obtained upon an oral application, without claim or merit, and not required by justice, or *proof* of worthiness upon the part of the recipient. It was *assuming without proof*; it was a favor granted by the mere asking. The judge says he simply made an "oral application;" and his honor "stated at once that the cause would be continued." As clear a case of *alms* as ever was granted.

I wrote to the Clerk of the Court for a certified copy of the grounds of the continuance, but received for answer that none was filed. And I now find that the only information I can get of the grounds for continuance, is from a letter addressed by the counsel to his client, John Allen, the *prosecutor*, and recipient of a favor granted by the mere asking for, and without argument or proof of worthiness; and yet, when a higher power is thus approached, it is not begging!

I stated, in 1853, that when the time came for trial, I could imagine the "*prosecutor begging for further time*," but again have to *crawfish* and acknowledge that I am no prophet—it was not the *prosecutor*, but his *attorney*, C. D. Coffin.

A few words as to the grounds and three main points that Judge Coffin confines himself to:—

"First."—The judge says that he did not know what I knew (very likely), "*and it was not until after the commencement of the term of the court*," (the italics are mine) "that the plaintiff understood that the denial of the infringement was the main ground of the defence." He don't know it yet, he only knows what he learned from my *plea*.

"Second."—(Following the judge.)—"After this notice in defendant's *plea* was filed and obtained by the plaintiff, there was *not time enough before the commencement of the term* (the italics are mine), for the counsel to get possession of and examine a publication that I *refer to in my plea*."

How can points "Firstly" and "Secondly" be reconciled? Reader, get the *Recorder* and examine for yourself.

"Third."—The judge's third point puts me in mind of a fable that I have read somewhere in which somebody was accused of stealing a sheep, and it was proven by a respectable witness, who testified "I saw him at the *very time* he *did*," and the opinion prevailed that he was a doomed man; but the attorney in the case produced a witness who testified "I saw him at the *very time* when he *didn't*." The judge presiding, after the point had been discussed, decided that it might go to the jury, "because if it be true that the witness saw him at the very time when he *didn't* steal the sheep, it follows that the prisoner cannot be guilty, especially if the day when he *didn't* steal the sheep was after the day when he *did*."

Moral:—Delabarre's testimony proves that he *did*; and the celebrated Dr. Robinson, of London, author of "Robinson on the Teeth," testifies that he saw him when he *didn't*. The "*point*" is not yet argued, nor Judge McLean's decision given, but of one thing you may rest assured, dear reader, the result will virtually prove John Allen guilty of having stolen a *sheep-skin*.

Now, my dear judge, a few more words with *you*, for I am done with your client, as not being "worthy of my steel" (pen.) You state that the article in question "is false in every particular, except the naked fact of the continuance of the cause." What other fact is stated, except that "The suit was in relation to an Improvement in Artificial Teeth made by Dr. Hunter, which was exhibited in London?" A fact that cannot be confuted.

I have taken thus much trouble to sustain an article that I did not write, but which was written by a reporter as current news of the day, because of the phraseology being similar to that used by myself.

The "Official Report" compels me to quote, "Like master, like man."

WM. M. HUNTER.

P.S.—This is *un-official*, my attorney having nothing to do with it, and therefore in commercial parlance, "Errors and omissions excepted."

W. M. H.

New-York Dental Recorder ;

DEVOTED TO THE THEORY AND PRACTICE OF

Surgical, Medical and Mechanical Dentistry.

Vol. IX.]

MARCH, 1855.

[No. 3.

CRYSTALLIZED GOLD.

[CONTINUED FROM PAGE 30.]

The properties possessed by crystallized gold, which render it so peculiarly adapted for the purpose of filling cavities in teeth, are, first, its great plasticity. This enables it, with very moderate pressure, to be moulded to the exact shape of the cavity. No matter how many or how diversified the irregularities are, the mass is adapted to them all, taking immediately an accurate impression of them, and consequently retaining a greater hold upon the walls of the cavity than any less plastic material could possibly do. So perfect is this adaptation, and so strong the material when made solid, that a thoroughly condensed filling can be cut through its centre, from top to bottom, and then, by cutting up and removing one of the halves, the other will be found to retain its position securely, and to constitute a perfect protection to the surface it covers for the time being, and in many cases impossible to be dislodged, except by drilling or cutting it out in pieces.

If a tooth having a *good* filling of this material in it is broken, the filling will be found upon examination to have taken an impression of the slightest scratch left by the excavator; and upon various portions of the surface that was in contact with the bone there will be found spicula of dentine imbedded in it; these can seemingly be rubbed off with the hand, but a magnifying glass will show that in very many instances they have only been broken off, and the remaining portions, though readily seen, are

not to be removed by any process of rubbing that is not sufficiently powerful to rub off or polish the surface of the gold itself. The advantages gained to us by this one property of crystallized gold are sufficiently obvious to render any thing expatiative upon them inexcusable.

Another property possessed by this preparation adds most materially to its value for our purposes. We allude to its capability of being welded at common temperatures. So firm is this union that it can after annealing be rolled or beaten into plate, and even drawn into wire. This property, when taken in connection with the foregoing, enables us not only to put into a cavity a mass of gold that can be adapted to every irregularity of its parietes, but to make that mass a solid piece of gold, equally hard and solid in every part, without using more force than would be required to fill the same cavity with foil used in the ordinary methods, and which when finished would only be *hard* upon the surface, and *solid no where*. There can be no question that in the majority of cases teeth can be, and are, preserved for many years by means of foil fillings; but if they can be preserved for a longer period, or in greater numbers, by the use of crystallized gold, why should not the latter be used instead of the former? There is no essential virtue in the gold, beyond the fact that it can be made to fit the cavities it is put into; it can be made solid and durable, when compared with other metals used for the purpose; and that it is less liable to be acted upon by the fluids of the mouth. Its durability depends in a great measure upon its solidity and perfect adaptation to the cavity. Its power of resistance to the action of morbid fluids depends upon its purity. Examined in this light, crystallized gold looks the best. It can be made more solid; it can be far more perfectly adapted to irregular surfaces; it is pure, and, at least in this respect, as reliable as foil.

We have now to say something relative to the adhesiveness of this preparation. This property enables us, after having thoroughly condensed a mass of the gold, to add another mass, and by the proper use of suitable instruments to cause it to unite with that first condensed; and this process can be repeated as often as necessary, the whole constituting when finished *one piece* of gold, *fitting* the cavity as near to perfection as human art can attain,

and possessing the great additional advantage over gold foil, as at present prepared and used, of being as solid and hard at the bottom, sides and centre as at the surface. Nor is this all; with proper manipulation the gold can be raised or built up to any desired angle or elevation (compatible with tooth filling), and that too without danger of its breaking off or crumbling and wearing away. In many cases, fractured and broken down teeth can be thus restored to their former shape and utility. We have seen several very remarkable instances of success in operations of this nature, and propose to give in some of the future numbers of the Recorder illustrations of a few such cases, which we think will prove more than interesting.

We have thus far avoided alluding to the different preparations of crystalline gold now offered for sale, preferring first to answer indirectly some of the objections that have been raised against its adoption by the Profession, and next to give some definite idea of what might be expected of the preparations generally. We purpose now to speak of the different varieties of gold, and more particularly of the various modifications of properties which they present.

The first article of the kind, called *Sponge Gold*, was introduced some five or six years since by Mr. Main, of New York city. It was in the form of a pulverulent mass, possessing very slight adhesive power, and its use was accompanied by such an amount of loss or waste of material as to render it useless for cavities in the superior teeth; and its want of adhesiveness prevented it from making a perfect filling when packed into cavities more easy of access. This preparation would seem to crumble into powder upon the slightest touch. We believe that its use was soon abandoned by those who had adopted it, and have understood that most of the operations performed with it failed in a few weeks, or months at farthest.

We have reason to believe that many of the Profession are under the impression that this preparation, and those now before us, are identical. The reverse is the case: they are different in structure, appearance and qualities.

We had occasion last spring (News Letter, April, 1854), to allude to the preparation sold by White & Co. Utica, New York; it is only necessary to say, that our opinion was unfavorable to its

use. Since then we have tried it frequently, and have at this time no cause for altering the opinion then expressed. We did not consider it *injurious*, but simply inferior to that made by other manufacturers.

The varieties made by Dr. Watts & Co. of Utica, are known as "Watts' patent prepared Gold," Nos. 1, 2, 3 and 4. The numbers expressing the different degrees of density, No. 1 being the most porous, and No. 4 the densest. The lighter varieties are of course the most bulky, this renders them more difficult to carry safely into cavities situated between the teeth, they are, however, exceedingly valuable in those cases where the walls of the cavity are thin and frail, as they condense with less pressure than the heavier numbers, and they are peculiarly adapted to large, open, shallow, or superficial cavities; the exquisite delicacy of the structure adding greatly to the plasticity, or quality of being perfectly adapted to the slightest irregularities of surface.

The denser numbers being less bulky, can often be used where the lighter varieties cannot, without great difficulty, be introduced into the cavity; as a rule, they have less plasticity, require much more force to condense, and as a consequence of their greater density, teeth can be filled much more rapidly with them than with the lighter numbers. We have used a great deal more of the gold made by this firm than we have of the varieties made by others, and consider that more reliance can be placed upon its uniformity of structure, qualities, and purity, than any we have met with.

We come now to the crystallized gold made by Taft & Watt, Xenia, Ohio. They offer three varieties, known as Nos. 8, 9 and 10. These preparations are all of a coarse crystalline structure which can be readily resolved by a magnifying glass of low power. The upper surface of the tablets or cakes is found to consist of long irregular crooked fibres matted loosely together, these are, however, entirely superficial, the remainder of the mass being composed wholly of crystals. These varieties are all exceedingly dense when compared with the more delicate structure made by Watts & Co. of Utica. They require greater pressure for their proper condensation, are of course, less plastic, and consequently less adapted for filling cavities with thin or delicate walls, and are more troublesome to use in shallow super-

ficial cases. The number eight is the most dense, and can only be used safely (in our opinion) in the grinding-surfaces of teeth where great pressure can be applied, and even then not always satisfactorily. There is a harshness about this preparation that we are not yet disposed to admire. The number nine is a much more valuable variety, it is less dense than number eight, and as a consequence possesses in a greater degree the valuable properties of plasticity, adhesiveness, and toughness; we consider this an exceedingly useful preparation, and would not willingly be without it. In structure, it resembles the number first described—the crystals are somewhat longer and more delicate, with their angles and points more clearly defined. The number ten seems to be an almost useless preparation, at least so we find it, it crumbles away readily, and seems to possess very slight adhesive property, in structure it resembles the other varieties, though the crystals are larger and coarser, and the mass less compact. Taft's preparations all possess previous to condensation, a more golden appearance than those made by the other manufacturers, this is due to the increased size of the crystals, causing a more perfect reflection of the light.

We have received several specimens of crystallized gold prepared in England. They are sold in the form of small conoidal pellets, a very convenient shape for the Dentist by the way. This gold seems in structure to occupy an intermediate place between that sold by Watts & Co., and Taft & Watt, in color. It most resembles Taft's in quality. It is inferior to their number 9, and we consider it inferior to all the numbers of Watts & Co. The specimens sent to us were less perfectly annealed than the kinds we are accustomed to use. In many places the structure was found to have been melted down—a defect which seriously interferes with its utility, but which may have been accidental, though all the English varieties or specimens we have seen were injured in the same way.

We have in the foregoing pages described as faithfully as we could all the varieties of crystal gold now *offered for sale* in the United States. We have seen a number of other varieties, most of which we have thoroughly tested and experimented with. It will be time enough to speak particularly of those when they are offered for sale. Improvements will be made, and are being

made, from time to time. A field so extensive cannot be cultivated in a day. We are assured that almost any alteration can be made in these forms of gold ; but it is important that the Profession should examine the matter thoroughly and carefully, and then such modifications as may seem most important or essential can doubtless be readily brought about.

[TO BE CONTINUED.]

CYSTS IN THE UPPER JAW.

CASE 1.—A young woman, aged 18, admitted into Guy's Hospital, under the care of Mr. Cock, having for some time suffered from a painful swelling of the gum of the left side of the upper jaw over the incisor teeth. An incision had been made into it by a surgeon who had previously seen her, and a portion of gum removed, but without benefit. It was found that the permanent lateral incisor tooth of that side had not appeared, and that its position was still occupied by a small deciduous one. Mr. Cock's diagnosis was that the tumour was probably connected with some malposition of the permanent tooth. Mr. Salter, the dentist to the hospital, saw the patient, and extracted the deciduous tooth, which was found firmly fixed, and its fangs unabsorbed. No further information as to the nature of the swelling in the jaw was gained by this measure. Mr. Cock determined accordingly to open the swelling and examine. This was done by means of small bone forceps, by which, after the gum had been detached, a portion of the anterior part of the jaw, just above the alveolar process, was cut away. A cavity of irregular shape, and about capable of containing a large marble, was laid open, and, after some search, the wanting tooth was found at its further extremity. The tooth was a large, fully-formed permanent incisor, beautifully white, and complete in every respect, excepting that its fang terminated abruptly in a rounded end at about its middle. The wound was left to heal by granulations, which it rapidly did without any inconvenience. It is intended, by the aid of the dentist, to have the tooth fixed in the position it should have occupied.

CASE 2.—A girl, aged 14, under the care of Mr. Hilton, in

Guy's Hospital, on account of a large prominent swelling of the left upper maxilla. Mr. Hilton diagnosed a cyst either in or connected with the antrum. The operation consisted in dissecting up the gum and soft parts, and then, with a strong pair of scissors, opening the front wall of the swelling, which consisted of thin and expanded bone. Nearly two ounces of thick, glairy fluid escaped. Some lint was afterwards introduced into the wound. After some slight suppuration, during which a lotion of the sulphate of zinc was used as an injection, the cavity filled by granulation, and the wound closed. The cure was complete, and all deformity of the cheek subsequently disappeared.—*Medical News.*

DEATH FROM FRACTURE OF THE INFERIOR MAXILLARY BONE.

On the morning of Thursday, the 30th ult., S. M., a seaman, 43 years of age, much shattered in constitution, while riding upon a load of hay which he was driving, two miles below Rough and Ready, the team took a sudden start, precipitating him from his seat to the ground in front of the forward wheels of the wagon. One of them passed over his head, causing a severe fracture of maxilla inferior; the line of solution commencing about the eighth of an inch to the right of the symphysis, running downward and inward, obliquely, and departing about half an inch from a perpendicular line. My old friend, Dr. Crather, was called upon at Rough and Ready, who adjusted the injury, whereupon he was brought to the house of an acquaintance, half a mile from this place.

Friday morning, the 1st inst., I was called upon to continue the treatment of the case. As a portion of the dressing was ill borne, we changed it, attaching the teeth with dentists' silk, and employing the four-tailed bandage in the usual way. The jaw, however, was the most miserable specimen of osteology we ever saw, to become the subject of fracture. The upper teeth, in toto, save an incisor snag, were wanting, and pieces of cork, though of little avail, were used in their stead. Here let me remark, from outside cases, as well as from a most pertinacious employ

ment in this, of every ordinary mechanical means, to retain the fractured portion of the maxilla in situ, that in such distorted condition of the mouth, as that referred to above, no mechanical appliance will succeed in causing a cure without deformity, save apparatus like, or on the principle of that of Lonsdale.

On Saturday, S. M. experienced a severe paroxysm of ague, lasting an hour and a half. Residing in the valley of Sacramento for many months, he had been subject to chills and fever. For this I administered quinine. Sunday he seemed to be getting along well, and I hoped for a successful issue of the case, intending to use the apparatus of Lonsdale, as soon as there was sufficient abatement of the inflammation and swelling, which was not more than usual. There was entire absence of pain, and little tenderness on pressure of the parts.

Monday, Dec. 4th.—Patient seems to be doing well; no untoward symptoms; pulse a little weak, but regular. Observed some oedema beneath his tongue, which, he remarked, caused slight inconvenience in swallowing. Requested a tube, whereby to obtain drink and nourishment, with which I promised to furnish him, of gum elastic.

Early Tuesday morning the messenger came in town for a coffin, informing me that death had overtaken my patient at 2 o'clock in the morning. I was somewhat startled at the intelligence, and the cause of death interested me; inasmuch as the day before, he was sitting up, and able to walk across the room. Besides, being a man of good sense, and considerable education, he communicated his symptoms, and made interrogations in relation to his misfortune, the time required for recovery, &c., with facility, in a legible, firm, and steady hand writing. Requesting the companionship of Dr. Wm. McCormack, of this place, we proceeded to the case to make a post-mortem. Incisions were made in the region of the fractured bone, which more fully illustrated the nature of the injury, and demonstrated satisfactorily the cause of death. Constitutional prostration, superinduced by a life of physical abuse, and the long continuance of ague and fever, already fitting the tissues for general effusion, together with the injury done the soft parts by the crushing of the wagon wheel, brought about the fatal event, which in ordinary cases would not have supervened. The soft parts were but slightly

bruised, having been protected in some measure by the hand; yet, violence comparatively slight, produced complete atony, in the cervical region of this worn-out man, which no means could resist. The cellular and vascular structures became mere receptaculi of serum. The tongue was enlarged, and, uplifted from its common resting place, was thrust against the roof of the mouth; the glottis swelled; the cellular parts about the throat were distended with fluid; the world of relation was cut off from my poor patient forever; breathing had ceased, and he was no more.

This is the first case of suffocation I have ever known, resulting from fracture of the lower jaw. Had I been warned in time, of the perilous condition of S. M., an *attempt* might have been made to save his life, through an opening in the larynx; though death would doubtless have ensued, under any direction of effort whatever, as the parts were utterly unable to resist the shock. It may be asked, with good reason, why the swelling, cellular effusion or local dropsy, was delayed till the seventh day. We would suggest that the local collapse was so great that reaction eventuated with tardiness, and scarcely at all; and when this did occur, the flood-gates were broken loose; the parts on a sudden were overwhelmed with fluid, without escape—the propulsive powers of the vessel were lost, and thence the result.

This case forcibly illustrates the fact that, in making up a prognosis as to the consequences of an injury, the constitutional power of resisting the efforts of violence is as much, or more, to be taken into consideration, than the extent of the injury which may be done.

CHARLES D. CLEVELAND.

Grass Valley, Cal. Dec. 14th, 1855.

From Bost. Med. & Surg. Journal.

CHLORIDE OF ZINC AS A CAUSTIC.

In many cases it is of great importance, in the use of chloride of zinc as a caustic, that it should not run. Such a one is at present under the care of Mr. Cook, of Guy's Hospital, in which it is being used to destroy a polypoid growth of the nose, part of which has been extracted. A paste made with flour was first

tried, but this was inconveniently moist, and liable to run. Mr. Cook now uses plaster of Paris, which answers admirably. The paste may be made of suitable consistence, and it does not afterwards become in any degree more liquid. The duration of the pain, after its use in this way, is generally much less than if it be used in a paste more liable to liquify.—*Medical Times and Gazette*.

REMOVAL OF A FIBROUS TUMOR FROM THE TONGUE.

MESSRS. EDITORS: As the following case contains several points of interest, I send you a brief report, from notes taken at the time, for publication.

William Canny, of Exeter, æt. 16 years, in good general health, came to me with his father wishing my advice in respect to a tumor situated on his tongue. The tumor was first noticed about three years previous, then of small size, but increasing gradually since, until the time of my seeing it, when, from its size, it caused him great inconvenience. His face was somewhat enlarged on the right side, in consequence of the enlargement of the buccal cavity to accommodate itself to the slow yet steady growth within. On examining the tongue, I found a tumor of considerable size, situated on the right side of its upper surface, at the same time inclined to the side, so as to push the substance of the organ to the left, and compress it to very narrow limits. The tumor was of considerable firmness, somewhat elastic, and very well defined, anteriorly, at the distance of an inch from the extremity of the tongue, when the organ was in a state of rest, and not appearing to implicate its structure; but posteriorly, it seemed to be combined with the substance of the tongue, and not so well defined. Injected vessels, of large size, were running over its posterior surface, and extending along its borders; otherwise the skin appeared to be healthy, though much stretched. It had caused him no pain, but within a few months there had been some soreness at its upper part. Different opinions had been expressed by physicians, who had previously examined the case, relative to its character and probable termination.

After a careful examination, I diagnosed a fibrous tumor and, prescribed removal as the only means of relieving him from such a barrier to speech and deglutition, and also from the inevitable consequences should it thus be allowed to remain. Accordingly, on January 23d, 1854, chloroform having been administered, I proceeded to operate, by first passing a strong ligature through the end of the tongue, to secure its movements; I then directed an assistant to draw the tongue forward and to the left, thereby bringing the tumor as far towards me as was practicable, and plunging into it a hook, I made a semilunar incision along its side, and another along its superior border, including between the two all the integuments except what was considered sufficient to close the wound. The anterior portion was easily separated from the parts beneath; but posteriorly it was found to involve the substance of the tongue, so that I was obliged to carry the dissection deeply into the organ, in doing which the lingual artery was divided, and sprung furiously. The tumor was immediately removed, and the artery seized with a forceps. A ligature was applied and knotted, by means of a thumb forceps in each hand; an operation obviously attended with some difficulty, from the situation of the vessel, but which I preferred to other methods usually resorted to under like circumstances. After the hemorrhage had been arrested, the wound was cleansed and brought together by three points of interrupted suture, and the operation finished; the whole time occupied being only a few minutes. The wound healed kindly; so that in fifteen days after the operation, he was able to attend his school, and read aloud tolerably well.

The tumor, after removal, was of an ovoid shape, two and a half inches in length, one and three quarters in breadth, and weighed twenty-two pennyweights. Microscopic examination proved it to be of a fibrous structure, involving but not invading the muscles with which it came in contact. Slight traces of fat were found in its central portion, where it was of a brownish color; but nothing malignant could be detected about it.

I saw the patient a few days since. There yet remains, at the posterior part of the cicatrix, a slight depression, and the tongue is somewhat confined, by the cicatrix, so as to prevent the protrusion or retraction of the right side of it, to that extent

which it would otherwise be capable of; but in all its usual movements, as in masticating, or even in speaking, it causes him but trifling inconvenience.

A. WATERHOUSE.

Exeter, Me. January 5, 1855.

Boston Medical and Surgical Journal.

SINGULAR CASE OF AMPUTATION BY MEANS OF A FINGER RING.

The following curious accident shows that the wearing of finger rings, "the history and poetry" of which has lately occupied the public attention, is not under all circumstances unattended by danger.

I was awakened about 3 o'clock, a few mornings since, by a young man who said that he had lost off the little finger of his right hand. The account given was as follows:—Being a clerk in the post office, he was busy in assorting the mails. Having occasion to reach up to a high box or shelf, he stood upon a stool, and in the act of stepping down to the floor, a thin plain gold ring, upon the little finger of his right hand, caught in a sharp projecting hook used for the purpose of attaching mail bags. Being thus for a moment suspended, as it were, by the ring, it cut its way, or, as the patient expressed it, *whittled* through the integuments of the finger, and finally separated the member at the last joint, the severed portion falling on the floor, while the ring remained suspended upon the hook. A fellow clerk immediately picking it up, very nicely adjusted it, and bound round a handkerchief. About twenty minutes elapsed before I saw the patient. There having been no hemorrhage of consequence, and finding the parts in good apposition, I was desirous of seeing what nature might effect. Accordingly I merely applied strips of adhesive plaster, and bandaged. The next day, I found the patient very comfortable, having suffered little or no pain. Still giving him the benefit of a doubt, I concluded not to interfere with the dressings. Two days after the accident, however, I ventured to take a glance at the parts, and found the finger, as might have been expected,

perfectly dead. Amputation was immediately performed, with the assistance of Dr. Minot, in the continuity of the first phalanx.

On examination, I found that the ring had cut through the integuments upon the dorsal surface of the finger, commencing just below the second joint, laying bare the second phalanx throughout its entire circumference, and finally severing the last phalanx at the joint. Sufficient sound integument was obtained upon the palmar surface to form a good flap.

I wish in this connection, to say a few words upon "the place of election" in amputation of the fingers, as regards the second and the metacarpal joint. So far as mere appearance goes, there is no question that the amputation should be performed at the metacarpal joint, a small portion of the metacarpal bone being also removed. This proceeding does away with the unsightly appearance which the stump of a finger must always present. But if usefulness is to be taken into consideration, it will be found that even the smallest stump is of the greatest importance—as the breadth and strength of the hand is thereby preserved, a matter of no small account to the individual dependent upon manual labor.

D. D. SLADE.

5 $\frac{1}{2}$ Beacon-street, Boston, Jan. 31, 1855.

—*Boston Med. & Surg. Journal.*

EXTRACTION OF A TOBACCO-PIPE FROM BEHIND THE EAR.

Mr. Henry Smith showed the Medical Society of London a portion of tobacco-pipe, nearly two inches in length, which he had extracted from behind the ear of a boy who, between two and three years previously, had fallen down while holding a long clay pipe between his teeth. When the child was brought to him, there was a swelling over the mastoid process, and a small aperture on it, by which some foreign body was detected, which at first was thought to be dead bone, as no history of the accident with the pipe had been obtained. When, however, the foreign body was extracted, the mother of the child first mentioned it. She stated that after the accident the boy had been seized with severe illness, accompanied with a great pain in the head.

These symptoms, together with an inability to open the mouth, continued for some months, at the end of which they subsided, when the swelling first appeared behind the ear, and continued there for two years; it had been thought to be merely an abscess, and treated accordingly. On examining the interior of the mouth, which could only be opened about half way, Mr. Smith could see an opening in the mucous membrane, just at the base and inner side of the ascending ramus of the lower jaw, through which the piece of pipe had penetrated. It must have passed along the inner and posterior border of the jaw, amongst the important vessels and nerves, and gradually made its way towards the surface, where it had remained for two years.—*London Lancet.*

CANCERUM ORIS.

BY THE EDITOR.

An instance of this rare and fatal disease occurred under our observation in the month of August last. It happened to a child two years and five months old. The patient was delicate, and had but a short time previously experienced an attack of measles. As the eruption disappeared, a slight degree of soreness was developed on the inside of the mouth, on the left side. This, at first, attracted but little attention, from the fact that it was attended with diarrhoea, which was the only thing looked upon by the parents as being grave. After the lapse of about two weeks the affection in the mouth began to swell the cheek, which continued to increase until a blue spot, of about the size of half a dime in diameter, made its appearance on the cheek, near the front margin of the masseter muscle. It was at this stage of the complaint that we first saw the patient. On examining the inside of the mouth, the mucous membrane of the gums on both jaws was found to be sloughing, and emitted a very offensive odor. The gangrenous process extended rapidly through the cheek, and spread to the left eye, the root of the nose, and upon the upper part of the neck. As it progressed the edges of the tissues in-

volved assumed a dark, charred appearance, attended with serious offensive discharges. The patient lived about two weeks after the gangrene was developed; and at last seemed to die from the exhaustion incident to the sloughing. During the last two weeks of its illness, its appetite was voracious, even when it had not the ability to direct the food with the cheeks and tongue to the esophagus.

The duration of the case was about four weeks, dating from the time that the stomatitis was first noticed.

The *treatment* was such as the books suggest. Nothing that was done, however, made the least impression on the destructive process.

Cancrum Oris is very likely to be mistaken for ptyalism, and the attending physician charged with mal-practice. We are surprised that our works on the diseases of children do not discuss the differential diagnosis more elaborately. In the first stages, the two diseases may resemble each other. In their history and progress, however, there are points that assist in making out a correct diagnosis. Cancrum Oris seldom, if ever, makes its appearance in children of good constitution. It selects those of lymphatic temperament, enfeebled by poor diet, bad air, or previous disease. Ptyalism, on the contrary, is as liable to occur in children of strong, robust habits, as any other. Cancrum Oris is really a gangrenous process, characterized by a strong tendency to spread; mercurial ulcers are not so destructive on the cohesive and vital forces of the parts. Again, the black, charred edges of an ulcer connected with Cancrum Oris differ very materially from the raw, irritable ulcer in the mercurial disease; besides, the former has little, if any, sensibility; in the latter, the sensibility is apt to be exalted.—*Ohio Med. and Surg. Journal.*

NEW METHOD OF OPERATING WITH GOLD FOIL.

The following method of preparing and using gold foil was lately discovered by Professor Arthur, while making some experiments with the view of testing the relative merits of foil and crystallized gold.

The means are so simple, and the results so important—so completely filling up an “aching void” in dental practice, that the only wonder is, how the facts could have escaped the observation of the thousands who have spent their lives in using foil in all manner of ways, except that which would, at present seem to be the right one.

Dr. Arthur, in the course of his experiments, ascertained, that by cutting sheets of gold foil into strips of convenient size, say, one third or one half the width of the sheet, according to the size of the cavity to be filled, and the ease with which it can be reached, then twisting these strips into ropes or coils, and heating them to a red heat in the flame of a spirit lamp, and afterwards clipping the ropes into small pieces with the scissors, that the pieces so prepared possess, to a remarkable degree, the power of uniting or welding, so essential where great solidity is required, and so indispensable to restore, by artificial means, the original contour of a broken tooth.

We have made some practical experiments with foil as prepared as above, and have been much pleased with the results. The method of operating with it is similar to that employed when crystalline gold is used, and the instruments somewhat similar, as the material is not of a friable nature, instruments with smaller points can be readily used, and in fact, are in a measure necessary, in consequence of the material being of a harsher nature than the masses of gold crystals.

In using gold foil thus prepared, it frequently becomes necessary to put into the cavity several pieces before any attempt at condensation is made, or this can be obviated by holding the first piece steady with the point of a small excavator or any other convenient instrument, until it is thoroughly condensed, and a sufficient number of other pieces added, and also condensed to prevent the gold from turning or moving in the cavity. We believe that the difficulty of compelling the pieces of gold first introduced, to remain in their proper position, constitutes the principal, and we think, the only objection to its use, in this respect it is inferior to crystallized gold. The two can, however, be used together with great advantage; there is usually no difficulty in packing in the first layer of crystal gold; and the gold foil prepared as above, can be readily added to the crystalline

layer, and is then readily condensed without danger of shifting its position; to this can be added other layers which must be thoroughly condensed before others are added, the surface must always be left rough until the cavity contains the requisite quantity of gold, it must also be kept perfectly dry, or else the welding or uniting property is destroyed, the intervention of the slightest moisture between the layers invariably prevents a perfect union.

A spirit-lamp flame is considered important in annealing—and a very small flame is necessary in order that it may be done uniformly, which is necessary, if uniformity of working properties is desired; a gas flame if small, is apt to smoke, and thus injures the surface of the coils by a sooty deposit, and if the flame is a large one the gold is sure to be melted in numerous places, which ruins for our purposes.

In preparing the strips, it is important to break up the smooth rolled or beaten surface of the foil, as much as possible, in order to present the greatest number of angles and irregularities—we have found this end readily attained, by first twisting the strips between the thumbs and fore fingers in one direction, and then untwisting and twisting it again in the opposite direction, and then again partially untwisting it leaving its surface completely broken up, and the coil or rope very loose and soft; when thus prepared and carefully annealed and clipped into pieces as described, it can be worked with a degree of satisfaction that will more than astonish those who are willing to experiment carefully in this direction.

Of course all dentists are frequently compelled to anneal their foil before using it, and many make it a constant habit, but the various points of practice recommended above must be taken as a whole, and in that view we consider Dr. Arthur's discovery an important one.

EGYPTIAN SPECIMENS OF DENTAL SCIENCE.—We saw it recently stated, in one of our daily papers (*Enquirer*), that Mr. Finney, a dentist, late of Alexandria, Egypt, is said to have found a "stuffed tooth in a mummy, and several teeth in other mummies which bore marks of filling."

PRACTICAL THOUGHTS ON TOOTH DRAWING.

NO. IV.

BY C. T. CUSHMAN, D. D. S., COLUMBUS, GA.

"Il arrive tous les jours que l'on rencontre en otant une dent, de nouvelles difficultez nue l'on ne peut pas prévoir."—FAUCHARD.

"All rules for extracting teeth must be subject to limitations, as circumstances will occasionally interfere, to throw the operator upon his own resources."—SNELL.

"As this operation, except in the eyes of those who delude themselves, is one of manual dexterity, it must not be believed that pathological and anatomical knowledge can supply the want of a practised hand."—DESIRABODE.

A Case showing that a tooth may break in extraction, even when general appearance promises easy success.—Anomalous specimen.

CASE XIII.—A negro girl, æt. 9, maxillary arches wide, teeth large and soft. The first left inferior molar, with deep carious opening on posterior grinding surface, penetrating the pulp-chamber. Patient low seated. I applied the forceps; carefully forced it on the neck of the tooth, and made lateral and perpendicular traction.

The crown and anterior root only came away, a fracture at the *fourchure* leaving the remainder firm in its socket.

Tried a slender root-forceps. The hold chipped off without effecting removal.

Applied the punch (lever) outside—loosened it some, but it was too firm for ejection. The thumb-fulcrum, (*pied-de-biche*—"hinds foot") applied inside, brought it out. This posterior branch was equally divided into *two* large diverging roots which stood across the alveoli.

Here was a molar, with *three* roots firmly articulated, and the whole tooth of a soft degree of organization. Two of the roots accordingly broke off, sooner than they could withstand the necessary force of extraction. Reason sufficient and valid. And such result will unavoidably happen to teeth that present less, or no very marked aberration of form, though extracted by persons of skill and experience, with approved and safe instruments. Although blame may be imputed in these instances, it does not properly attach itself.

A Case showing that neither the Key nor Forceps will always succeed.

CASE XIV.—Mr. H. æt. 30, nervous temperament.—April 21, 1852—been suffering a long time from periodontitis of the left inferior wisdom tooth. He applied to a physician, who broke it off so low with the key that he gave it up. He then came to me, and I tried forceps. By forcing it down, I still obtained what seemed to be a fair hold; but in trying to extract it, it broke off *again* on the line of grasp, without loosening.

The contiguous second molar was standing firm. I took the elevator (*langue de carpe*) thrust the point obliquely down between it and the diseased roots, and by a forcible turn, at once raised them out. The operation was painful, made so mostly by the highly inflamed condition of the gums and periosteum; but it was not more so than the two previous trials.

It is not every tooth that can withstand the hard pressure of forceps, or force of the key, particularly if it be necrosed; but such tooth may not break under the elevator.

In using the elevator, or elevator-forceps against the upper wisdom teeth, there is danger of forcing off the coronal extremity of the alveolar ridge.

The Key for extracting the Cuspid Teeth.

CASE XV. (April 26, 1852).—A very old lady, who was almost toothless, suffered acute periodontitis occasionally from the root of the left inferior cuspid tooth. The crown was decayed away to the gum; the upper surface of the root funnel-shape; the sides so thin as to be almost certain to crush under the forceps.

The root was too firmly set to be raised with the punch—the elevator would wound the gum, which was inflamed and puffed up around it. Her age was too great to admit of much patience on her part, or delay on mine, in the operation. Brevity was essential in this case.

Applied the key, hook inside—extracted the root instantly, and with but little pain, much to her delight.

There is no fact of the human character more remarkable than that the well-settled, honest convictions of the mind are sometimes supplanted by those of the very opposite nature.

I have known the time when (from reading and considering more than from practical experience) I would have denounced

the very title of this case as proclaiming a professional heresy. Under peculiar circumstances, I do not now so regard it at all.

Ibid.—No. 2, CASE XVI.—A middle aged man, of nervous temperament, teeth naturally soft, and in wretched condition—lost nearly all, and wears several failing pivot teeth, on which the lower incisors strike with aggravating and unresisted force.

Suffered three days severe pain in several, or all. The left superior cuspid, with others, was to be extracted. Crown gone, gum receded some. As the root was slightly moveable, I was rash enough to oppose my own well-founded maxim, and promise that it would probably come out rather easy. But the forceps broke it off, with a distressing *jar*, leaving it but little looser, and in no better condition for further effort. I then applied the key, hook outside, and that quickly and nicely removed the root.

It has frequently come to my observation, that when the periosteal membrane of a tooth has for several years suffered inflammation, such tooth, although seemingly loose to the touch, resists extractive force more stoutly than ordinarily. And when extracted, the investing tissue presents a peculiar appearance, somewhat that of being minutely broken up, instead of the usual smooth, laminal separation. May not this be the initial stage of Exostosis, or bony consolidation. I have some pathological demonstrations of the latter, which are quite unmistakable.

The key is the surest instrument for those young, and other *scary* persons, who, perhaps never having a tooth extracted, will detain you an hour before *making up their minds* to submit themselves, and then allow you only one *grab*.

I remember a case in point—a young girl who baffled me nearly an hour and a half before allowing me to place the instrument upon the aching molar, the first right inferior. The crown was much hollowed by decay, but it probably might have been extracted with the forceps. I finally *nabbed* it with the forceps—there was a yell and a spring to get away. I felt the crown crushing, the hold giving way, and struggled to force the instrument further down, quite against her will—indeed it was much of a *tussle* between us. I regretted it, and seldom if ever before attempted to operate under such disadvantage—regretted it because I effected nothing, except to inflict some pain.

[CONCLUSION NEXT MONTH.]

EDITORIAL.

Our subscribers and advertisers are requested to bear in mind that all communications relative to the financial or business departments of the Recorder should be addressed to Messrs. Sutton & Raynor, No. 609 Broadway; and all communications relative to the editorial department, exchanges, articles for publication, books to be noticed or reviewed, improvements to be noted, &c., &c., must be addressed to "Editor of Dental Recorder, 139 Fourth Avenue, New York."

We had the pleasure a short time since of attending the commencements of the Philadelphia and Baltimore Dental Colleges. It would certainly gratify any one having the interests of our profession at heart, to notice, as we have, the improvement that is yearly increasing in the manner and material in and of which the Dentists of the future are being made. Not only are the requirements greater, and the course pursued more thorough, but the men themselves are of decidedly superior cast. Young men whose appearance, manner and education will entitle them as a body to rank with any in the country, cannot but add strength and stability to a *profession* of so recent date as our own.

The commencement of the Philadelphia College took place upon the evening of the 28th February. During the past session they have had twenty eight matriculants, of whom the following received the degree of Doctor of Dental Surgery:

NAME.	STATE.	SUBJECT OF THESIS.
D. S. Hutchinson,	Pennsylvania,	Preservation of the Teeth.
Jeremiah Hayhurst,	Pennsylvania,	The Practice of Dentistry.
E. G. Cummings,	New Hampshire,	Filling Teeth.
Samuel Walton,	Pennsylvania,	Irregularity of the Teeth.
James Bryson,	Tennessee,	Filling Teeth.
James A. Butner,	North Carolina,	Insertion of Pivot Teeth.
David W. Hogue, M.D.	Scotland,	Chloride of Zinc.
Daniel McFarlan,	Dist. of Columbia,	Mutations of the Dental Pulp.
Vinecome Shinn,	Pennsylvania,	Dental Pulp and its Diseases.
John Levering, jr.	Pennsylvania,	Dental Tissue.
Jethro J. Griffith,	Pennsylvania,	Mercury.
Jacob S. Simmerman,	New Jersey,	Sensibility of the Teeth.
Joseph P. Cornett,	Pennsylvania,	Mechanical Dentistry.
Aurelia Letamendi,	Cuba,	Maxillary Sinus.
W. H. Freeman, M.D.	Pennsylvania,	Responsibilities of the Professional Dentist

HONORARY DEGREE.

The Honorary Degree of Doctor of Dental Surgery was conferred upon Hudson S. Burr, M.D., of Philadelphia.

The commencement of the Baltimore College took place March 1st. They have had the past session fifty matriculants, and the Degree was conferred upon the following named graduates:

Samuel Belford,	Pennsylvania.
De Witt Clinton Benbow,	North Carolina.
John Henry Bond,	Maryland.
George Jacob Conner, B. A.	Pennsylvania.
Joshua Caleb Curry,	Georgia.
George Richard Hy. Duff,	Kentucky.
Ferdinand James S. Gorgas, B. A.	Pennsylvania.
Hugh McGinnis Grant,	Virginia.
Chapin Bond Harris,	Maryland.
West Harris,	North Carolina.
Randal Duke Hay, M. D.,	North Carolina.
Benjamin Dorr Hyde,	Maryland.
John Jones,	North Carolina.
James Warner Kilpatrick,	North Carolina.
Christenberry Lee,	South Carolina.
Anderson Roscoe Miller,	North Carolina.
George Washington Pelletier,	North Carolina.
Frederick Henry Rehwinkel,	Germany.
Addison Exum Ricks,	North Carolina.
Rufus Scott, B. A.	North Carolina.
William Shakspeare Tate,	North Carolina.
Theodoro Suzzara Verdi,	Italy.
James Thomas Walton,	Virginia.
John Henry Wayt, M.D.	Virginia.
Wm. Garlington Westmoreland, M.D.	Alabama.
Joseph White Wiley,	Pennsylvania.
Adoniram Judson Wright,	New York.

The annual meeting of the Alumni of the Colleges was held in Baltimore, March 1st. Owing to the absence of Dr. W. H. Thackston, the members were called to order by the Vice-President. The opening address was made by Dr. A. A. Blandy. The reports of several of the committees were ordered to be published. Twelve or fifteen new members were admitted; and after election of officers to fill the vacancies occurring at the close of the session, the Association adjourned, to meet in Philadelphia on the day of the next commencement of the Dental College in that city.

The names of the officers of the Association, the dates of their election, and the expiration of their term of service, are as follows:

President: Professor Robert Arthur; elected 1855; term expires 1856.

1st Vice-President: Dr. C. W. Ballard; elected 1854; term expires 1857.

2d Vice-President: Dr. W. H. Dwinelle; elected 1854; term expires 1856.

Corresponding and Recording Secretary: Professor A. A. Blandy; elected 1855; term expires 1857.

Treasurer: P. H. Austen; elected 1855; term expires 1856.

BOOK TABLE.

TRIAL AND CONVICTION OF DR. STEPHEN T. BEALE, (with letters of Chief Justice Lewis, Judges Black and Woodward, &c., &c. This is a pamphlet of some thirty pages, signed by A. Rood, James Bryan M. D., John Chambers, S. S. Moon, Thomas White, and James Berry of Philadelphia.

The tenor of the whole paper is decidedly in favor of the accused, and adds strongly to our conviction expressed in the January number of the Recorder, relative to the verdict, having been more the result of feeling than of testimony.

It seems from the pamphlet that *certain parties* offered to guarantee a pardon for the prisoner provided ten thousand dollars could be raised within a given time. This liberal offer was declined. If the above named sum is the market price for committing a crime of this nature in Philadelphia, we would advise those who may be that way inclined, always to pay in advance, and thereby save at least, the loss of time, reputation, and money incident to a trial by a jury *who may* be drunk enough to say guilty without meaning or even knowing it.

It seems also (same authority) that Dr. B. would have been pardoned had it not been for a *political motive*. If such is the case, and Dr. B. is really an innocent man, we would urge upon the good people of Pennsylvania the importance of an immediate *exchange* of position, on the parts of their late Governor and *his* prisoner.

Every one has heard of the ill-omened rumors charging the accused with having committed similar offences at previous times, &c., &c. The gentlemen whose names are appended to this report state that they investigated all such that could be traced to a definite authority, and with a result in every case, favorable to the prisoner. With regard to the letter offered by the prosecuting attorney as evidence, and ruled out by the judge, they are somewhat inconsistent, and their argument faulty. This may be the result of haste on their part, but the error should be at once noticed and corrected, as this particular letter has been, in our opinion, the hinge upon which hung the fate of the accused, however improper or defective it may have been as testimony. The mere whispered rumor of its existence acted upon all within reach of its influence, like the wintry blasts of Greenland. Minds previously open to the truth, were at once incased in ice, gentle hearts became as hardened steel, and even sympathy was frozen. We quote the passage containing the inconsistent remarks, italicising the latter only.

"Being thus foiled in every effort to procure an attested copy of this famous letter we are obliged to rely on the impressions and statements of those who were permitted to see it. The Hon. Judge Black says: "I have seen and read Dr. Beale's letter in the hands of Mr. Reed. There is nothing in it to implicate the doctor.

"Mr Mitchell, on perusing the letter at Mr. Reed's office, with special attention, went directly to his own, a distance of some two or three squares. Immediately he penned, from memory, the following, as the note in Mr. Reed's possession:—

"DEAR MADAM: I regret exceedingly that you should believe that I intended to insult you. I certainly did not intend so to do, and for the sake of my wife and seven little children, I hope you will believe me, and say no more about it.

STEPHEN T. BEALE.

"P. S. I shall never give ether hereafter to any person, except in the presence of a friend of the patient,

"The above must be very nearly the contents of Dr. Beale's note, which, by its suppression on the ruling of the Court, did him so much injury. Judge Black's recollection of the note differs from Mr. Mitchell's only in one word. "Verily, how great a matter a little fire kindleth!"

"Mr. Mitchell says, *this note is without date and addressed to no one. If the name of the person for whom it was intended could be obtained, we suspect a good deal of light would be thrown upon the whole affair.*

"Dr. Beale said to the man who came to him with the complaint of this woman; "I understand, sir, the game she is playing. She wants to extort money. How much of it do you expect to receive?" "O, no," said he; "She don't want money. If you will write her a note, I think she will be satisfied." It was in just these circumstances that this note was written, which has been so much magnified, and so grossly perverted, and had such a powerful influence in hastening the doom of this unhappy man."

It is evident, from the remarks here quoted from Dr. Beale, that *he knew* the circumstances under which this note was written, he must also have known to whom it was written, and for whom intended. The note itself is vague, and pointless why not explain the circumstances that compelled its issue? it might be applied to any charge from imagined roughness to heinous crime. Why leave so much to the imagination, and why, in Heaven's name, preface the statement made with the contradiction expressed in the following, "If the name of the person for whom it was intended could be obtained, we suspect a good deal of light would be thrown upon the whole affair."

We have always felt that the evidence submitted to the jury in this case was trifling in the extreme. Upon such evidence, a simple charge of petit larceny could never be sustained, and the behaviour of the witness after the alleged event and previous to its disclosure, was of itself more than sufficient to throw discredit upon her testimony. In our opinion the prisoner is entitled to his liberty. If the evidence is sufficient to convict him, who can be safe that has ever administered chloroform or ether without reliable witnesses present?

We have always disapproved of these drugs for relief from the pain of dental operations; and where its administration has been strongly urged we have always insisted upon the presence of the regular medical attendant of the party, and upon his assuming all responsibility except that immediately connected with the operation to be performed.

MANUAL OF HUMAN MICROSCOPIC ANATOMY. By A. Kolliker, Professor of Anatomy and Physiology in Wursburg. Translated by George Burk, F.R.S., and Thomas Huxley, F.R.S., with Notes and Additions by J. Da Costa, M.D.

To the Dentist, the above is one of the most interesting works that has been issued for a long time. Between thirty and forty of its pages are devoted to the minute anatomy of the teeth; and these are illustrated by twenty-six wood cuts, so *plain in character*, and so sensibly arranged, as to be at once readily comprehended. For the former item we are indebted to Messrs. Lippincott & Grambo, who have published the work in good style throughout. It is important to note the fact, that the translators of the work do not wholly endorse Professor K.'s statements relative to the development of the dental organs. We shall at an early date lay these contested points before our readers, and after so doing will give in full Professor Huxley's paper upon this subject, published in the Quarterly Journal of Microscopic Science. We would advise our readers to secure this work for their libraries while they can. It is full of valuable and interesting matter, capitally illustrated.

New-York Dental Recorder ;

DEVOTED TO THE THEORY AND PRACTICE OF

Surgical, Medical and Mechanical Dentistry.

Vol. IX.]

APRIL, 1855.

[No. 4.

CRYSTALLIZED GOLD.

[CONTINUED FROM PAGE 54.]

In using crystal gold, it is of the utmost importance that every possible precaution should be taken to prevent the gold from becoming wet. An accident of this nature effectually prevents the welding or union of the different masses of the metal for the time being. When a difficulty of this kind is apprehended, the metal already introduced into the cavity should be condensed as rapidly as possible, the surface burnished, and if the operation is likely to prove a tedious one, the patient should be allowed to rest, after which the surface of the gold should be thoroughly dried. For this purpose we have found nothing equal to the soft bibulous paper, which is made in Europe for the purpose of wrapping around watch movements or other delicate structures which it is important should be kept free from dampness while being *exported*. When the gold is made perfectly dry, the surface should be cut up or roughened as much as possible, when new layers can be added, and condensed until the operation is completed, or the like difficulty is again presented, to be again overcome by the same means. It must be borne in mind that the surface of the gold may become damp without its having been reached by the saliva or mucous secretions. The condensation of the moisture of the breath is often quite sufficient to cause us much trouble, and is only to be obviated by the above means.

The instruments used for filling teeth with crystal gold are

necessarily somewhat different from those used for gold foil. In the printed directions that accompany the tablets of gold, as also in the advertisements put out by the various manufacturers, great *stress* has been laid upon the use of instruments resembling burrs. Compliance with these directions has been the cause, we opine, of great *dis-tress* on the part of numerous operators. The truth is, a burr, from its spherical shape, is about the worst form of instrument that could be devised for this purpose. Upon pressing the pieces or masses of crystal gold with a burr, the material will, in many cases, envelop the point or end of the instrument; and thus the gold instead of being lodged safely in the cavity, or upon the mass already condensed, is withdrawn by the same agency that carried it to its destined position. We know of some who have never made even the slightest experiment with crystal gold with any other instrument than this. Their failures prove the fallacy of the manufacturers' directions, but go no further.

For filling cavities in the grinding surfaces of teeth, the instruments should be round, not wedge-shaped; their points, notched, crossed, or under-cut. They should be of different sizes; some large for introducing the gold, some smaller for partially condensing it, and some very small, even to ultimate points, for completing the solidifying process. In a future number of the Recorder we expect to lay before our readers drawings, more completely illustrating the various form and patterns of instruments required than we can possibly do by mere description. It may not, however, be unimportant to state, at this time, that all the instruments required for operating with this form of gold can be obtained of Morson or Chevalier of this city. The instruments we are now using were made by Morson, from patterns furnished to him by us. They seem to answer the purpose for which they were intended most admirably, but are, like every thing else that is new, *liable* to be very much improved.

It is not our intention to enter upon a long dissertation relative to, or illustrative of, filling teeth. We merely speak of the modifications of the usual mode of operating with foil that may seem most essential where the new material is used; and we speak at this time more particularly of cavities in the grinding surfaces. If the walls of the cavity are sufficiently strong to bear the neces-

sary amount of pressure with perfect safety, it would be advisable to commence at once with the densest numbers of gold for this purpose. Taft's No. 9, or Watts' No. 4, will be found to answer the purpose best, as they can be thoroughly condensed, and the cavities *filled up*, in less time than if the lighter preparations were used. The first piece of gold introduced should be as large as can be conveniently packed into the cavity without *wasting*. It should be thoroughly condensed against the *bottom* of the cavity previous to the introduction of another mass. The next pieces introduced should be packed into the angles formed by the bottom layer and parietes of the cavity. This course should be persisted in until the gold reaches the surface of the tooth, when the surface of the gold will present the appearance of a series of inclined planes, extending from the edge of the cavity towards the centre and bottom. We then have a solid mass, in fact if properly worked, one piece of gold, fitting the cavity in the tooth perfectly, and having in its centre a depression resembling an inverted cone or pyramid. This should now be filled up with masses of the crystals, commencing at the bottom of the depression, and adding fresh masses *only* when those previously introduced are made as solid and hard as it is intended they should be. After this, the edges of the filling should be carefully tested with a finely-pointed plugger; and where impressions can be made, new gold should be added, until the whole is filled and condensed flush with the external opening. And now the *burrs* can be brought *usefully* into requisition; for with them the surface of the filling can be reamed or burred out, so as to leave it smoother than a filed surface, and with the centre so depressed as to answer the purpose of a drain, that will convey all impurities *from* the edges of the filling, and retain them upon the centre of its surface until they are removed by the tongue or brush. This being done, the patient should be directed to close the teeth, and if the gold is too prominent, they should be required to bite firmly upon the filling, the mark thus made is simply a burnished surface. It should be at once cut away with the burr, and the process repeated until the teeth can not be made to strike the gold. The surface of the filling should now be honed down with Arkansas stone, the marks thus made removed with pumice, then polished with crocus, and finally

burnished, when it will present an appearance that will at once inspire confidence in the permanency and durability of the operation.

The process of cutting out the filling, so as to allow of its antagonizing perfectly with the opposing teeth, is far more important when this material is used than if the cavity had been filled with foil, as the crystal gold, when properly condensed, does not give or wear away as readily as foil; and we have known periostitis to result from the great and continued pressure thus made upon the tooth by its antagonist. The probability is that the *economy* of using crystal gold in simple cavities in the grinding surfaces of teeth is only to be noted in the durability of the operation. Owing to the greater density of the filling, it must, of course, contain more of the precious metal than a foil filling of the same size; more time is also required to *introduce* the gold, but this is counter-balanced by the time saved in preparing the cavity, which, from the more plastic nature of the material used, need not be grooved or hollowed out to the extent necessary for the successful employment of foil. But it must never be forgotten that a gain in the durability and utility of an operation of this nature is a great advantage gained over the enemy—one that will be highly appreciated by the most *thankless* patient, and one that will ever add to the operator's reputation and self-satisfaction.

We now purpose to speak of compound or double cavities in teeth. These are usually the result of caries having commenced in two or more different places, and so extending as to cause the necessity of cutting the whole into one cavity, having open surfaces or entrances upon more than one side of the tooth. The most common combinations of this nature are the result of the junction of grinding surface cavities with cavities in the anterior or posterior approximal surfaces. These present great difficulties when it is intended that foil should be used, nearly all of which are dispersed by the use of crystal gold. The most successful plan of operating with foil in these cases is based upon the principle of arching, in order successfully to make the angle or to turn the corner presenting. The last piece introduced, acting as the key-stone of the arch, is always difficult to introduce; and frequently, during the process of condensing it, the gold at

the extremities of the uniting cavities would be forced out; and even when finished it is more exposed to injury than any other portion of the gold, possessing also less ability to withstand the ravages of time and use; and when once injured or displaced, the whole operation failed. In filling these cavities with crystal gold, these difficulties and dangers are obviated. The last piece to put in is the easiest to introduce; it will not during condensation force out any of the gold previously condensed; and should a piece of the angle or corner of the filling become injured or even broken off, the remainder of the operation is not thereby affected, and the injury can at any time be repaired to the fullest extent.

[TO BE CONTINUED.]

From the Boston Medical and Surgical Journal.

A NEW CURE FOR OBSTINATE BLEEDING FOLLOWING THE EXTRACTION OF A TOOTH.

BY SAMUEL A. CARTWRIGHT, M. D., NEW ORLEANS, LATE OF NATCHEZ.

Having had two interesting cases—one last week and the other last month—of obstinate and protracted bleeding, threatening life, following the extraction of a tooth, continuing three days with occasional intermissions, and having succeeded promptly in arresting the hemorrhage, after the usual remedies in able hands had failed, the author is reminded of a duty he owes the profession, of making known a practice, which for many years he has found to be almost instantaneously effectual in such cases. It is simply a common amputating tourniquet applied over the head obliquely—the pad placed on the outside of the cheek over the bleeding gum, and the screw over the pad—a pledget of raw cotton, and nothing else, being previously inserted, without force, into the bleeding cavity. As soon as the screw is brought to bear on the pad, resting on the outside of the cheek, the hemorrhage instantly stops.

The case last week occurred in a delicate young lady, the daughter of a country physician who brought her to town and stopped at the house of another physician, an old practitioner of the city. A few days afterwards one of our most popular, learned

and expert dentists extracted a bicuspid tooth for the young lady. The cavity soon began to bleed quite profusely, and continued to bleed at intervals from Friday until last Monday, notwithstanding tight plugging and various styptics, including the application of chloroform to the socket by means of plugs saturated with that substance—an idea probably suggested by Kendrick's cotton pledget dipped in anhydrous alcohol. The chloroform arrested the bleeding for half an hour or so, but it broke out worse than ever. The dentist and the writer of this article were sent for at the same time. As the former had but a short time before seen the patient, and having again and again tried to arrest the bleeding, without anything more than temporary success, he sent a French dentist in his place. The author arrived a little while before the Frenchman, and finding the whole house alarmed and the young lady bleeding profusely, proceeded immediately to apply the tourniquet. A plug had been pressed into the cavity very tightly, which gave the patient much pain, and the jaw was so sore that it could not bear the least touch without pain. The plug was removed, and a little cotton loosely inserted into the cavity. The lip was drawn over it, the pad applied over the lip, the screw over the pad, and the strap over the head and under the chin. A few turns of the screw were made, when the Frenchman entered the room in haste, and seeing the blood, immediately began to prepare for cauterizing the cavity and forcing a plug, to fit it, into the very bottom. The patient shook with fear at the sight of the instruments, which looked like those that had given her so much pain. The author told her to fear nothing—the bleeding had stopped and would not return. The Frenchman could not understand why lateral pressure on the outside of the cheek should have any effect in arresting the hemorrhage, and, from the quantity of fresh blood about, supposed that it was still going on—not knowing that the tourniquet had just been applied. Nor could the author make him exactly understand the rationale of the process. The bleeding was arrested on the same principle that uterine hemorrhage is, by making the bleeding cavity contract. The yielding parietes of the alveolar process, which had been expanded by the extraction of the tooth, and still more expanded by the forcible insertion of tightly-fitting plugs, no sooner felt the lateral pressure of the screw, than they

contracted, and that contraction arrested the bleeding. The contraction arrests the bleeding with as much certainty as the contraction of the uterus arrests uterine hemorrhage after delivery. The patient was directed to spit, and instead of blood, a whitishropy saliva issued from the mouth. In half an hour the tourniquet strap, around the head and lower jaw, was loosened sufficiently to enable her to eat, as she was nearly half starved for the want of food. The tourniquet, instead of giving pain, *relieved the pain* by pressing the extended parietes of the alveolar process together—the separation of which, by the plugs, had caused the pain. In a few hours the tourniquet was removed, but the patient had been so frightened by the hemorrhage, that she could not go to sleep, until gratified by its re-application, and some one to sit by and hold it. Although it has now been nearly a week since the bleeding was entirely arrested, she still retains the instrument in her room for fear of a return of the bleeding. No medicines were used.

The other case occurred in a lady of a strongly-marked hemorrhagic diathesis. An upper molar tooth, next but one to the wisdom tooth, had been drawn. The strap of the tourniquet was applied over the upper lip and around the head, leaving the lower jaw free. A pledget of raw cotton was loosely inserted into the bleeding cavity; the pad of the tourniquet was placed over the alveolar process of the cavity, and the screw over the pad. A few turns of the screw, which rather gave relief than caused pain, immediately arrested the bleeding. Soon the pain and irritation of the jaw—caused by the extension of the cavity in thrusting plugs, caustics and styptics into it—abated, and at last ceased. The patient, having been able to take but little food or drink for three days, ate and drank with the tourniquet on—the lower jaw not being bound by the strap of the instrument. In an hour or two the instrument was removed, and the following night the bleeding returned, but was instantly checked by the patient herself, who, with the assistance of a female friend, re-applied the tourniquet. Finding that the hemorrhage could be commanded at will, in a moment, the patient preferred dispensing with the instrument soon after the bleeding was arrested, and re-applying it when it commenced again, to wearing it on her face. It was several times thus re-applied to stop the hemorrhage, and always

with success. After a few days there was no further return of the bleeding. In the mean time, lemon-juice and other antiscorbutic remedies were given to correct the hemorrhagic diathesis. The patient is the wife of a gentleman residing in Arkansas, and was on a visit to her relations in this city when the tooth was extracted. On the third day after the extraction, her strength was so much exhausted by the hemorrhage, that her husband, who lives about a thousand miles off, was telegraphed and started immediately to see her, and soon arrived, expecting to find her dead. The able surgeon-dentist, who extracted the tooth, was notified, soon after he had made his last visit on the third day, that the hemorrhage had returned worse than ever. This summons to see the patient again was speedily followed by a report of her death. Knowing the critical condition of the patient, he believed the report to be true, and said he never suffered more in his life. The rumor of her death originated, it is thought, in some one leaving the house before the tourniquet had been adjusted, immediately after witnessing the temerity of the writer in unbinding the jaws and pulling out the plug which the dentist had so carefully and artistically inserted into the cavity.

The writer, at different times for the last quarter of a century, has been in the habit of promptly arresting hemorrhage, following the extraction of a tooth, by the tourniquet applied as above; and it was not until two ladies of distinction came very near perishing from hemorrhage under such circumstances, in defiance of the best professional skill in a great city, remarkable for its excellent dentists and physicians, that he became fully aware of the value of the discovery he made, many years ago, of the virtues of the tourniquet in such cases. On turning to modern authors, he finds that the best way for arresting hemorrhage of the kind, is not only unknown, but the theory, indication or principle to direct the practice is at fault. "*Il faut tamponner, avec force, la cavité, qu'a laissé la dent,*" is the principle directing the practice of the French. The same principle, to plug, with force, the cavity, from which the tooth came, governs the English practice. To fulfil this indication of stretching the cavity to stop bleeding from it, sponge, cork, agaric, lint, cotton, wax, putty, and even driving back the tooth into the socket it came from, have all been called into requisition—also a paste made of tannin and cotton with alcohol,

thrust into the socket with a probe and pressed down with the finger until it becomes a concrete. Not only simple plugs, but those steeped in alum, galls, alcohol, chloroform, creosote, and other stimulating and astringent substances, are recommended. Plugs tipped with strong caustics of various kinds, also have their advocates. Yet Prof. South, of the Royal College of Surgeons of England, and Surgeon to St. Thomas's Hospital, candidly confesses, in his edition of Chelius, that he has tried most of such things without effect, and "thinks the actual cautery had better be resorted to at once, without loss of time." He gives a case, however, where the actual cautery in Brodie's hands failed to arrest the hemorrhage for a longer period than six hours, and the patient died. He gives two cases of his own where the same remedy was repeatedly used, and it was nearly two weeks before the bleeding was finally stopped. The theory of stretching the bleeding cavity by thrusting foreign substances, with force, into it, is radically wrong, and the practice under it must necessarily be unsuccessful in severe cases. The true indication is to contract the cavity by compression with the fingers on each side of it—introducing previously a loose pledget of cotton or lint for the sides of the cavity to contract upon; and in severe cases to resort to the tourniquet to make the lateral pressure. The perpendicular pressure from below upward, or from above downward, increases the tendency to hemorrhage by enlarging the cavity; whereas the lateral pressure, by contracting the cavity, stops the hemorrhage immediately. It should be made, however, not exactly laterally but somewhat diagonally, so as to act upon the yielding part of the alveolar process that enclosed the tooth.—

CANAL-ST., NEW ORLEANS, *Feb.* 20, 1855.

From the New York Journal of Medicine.

ON A PECULIAR FORM OF MALIGNANT INFLAMMATION OF THE LIPS AND FACE, RESEMBLING MALIGNANT PUSTULE.

BY W. PARKER, M. D.,

Professor of Surgery in the College of Physicians and Surgeons, New York.

There have come under my observation within a recent period several cases of peculiar form of inflammation of the lips and face, which resembles somewhat phlegmonous erysipelas, but

more strikingly, especially in its commencement, malignant pustule, and, in its subsequent progress, carbuncle. It, however, differs from these affections in some essential particulars, which will be noticed after giving the details of the following cases, which illustrate the peculiarity of this form of disease.

CASE 1.—I first saw this patient on the 18th of last December. He was a young man, aged 23, merchant, of good character, temperate habits, and in the previous enjoyment of good health. About a week before I visited him, a small pustule made its appearance upon the central portion of the lower lip, just below the edge of the vermilion border. It became painful, had a livid areola, gradually but slowly enlarged, and finally broke and began to discharge. The pain increased, and the swelling extended downwards upon the chin. At my first visit, about this period, the tumefaction had reached as low as the os hyoides, and had extended over the right side of the face to the head; it was hard to the feel, of a livid color, insensible, and had now much the appearance of a carbuncle. The lips were greatly tumefied, everted; gums swollen, and of the same livid color; tongue moist; inside of mouth unaffected; ptyalism considerable. The lower lip, about the seat of the original pustule, appeared gangrenous. The pulse was 120, rapid and feeble, respiration unaffected. He was able to get up and sit in the chair, but was suffering from great depression of the vital powers. The course pursued consisted of deep scarifications of the lips and yeast poultices to the swelling, and stimulants to sustain the general system. The swelling continued to extend, involving successively the neck, face, and finally the head. He died on the following day, the 19th, late in the evening.

CASE 2.—I visited, on the 15th of January, a patient, aged 45, merchant, suffering from what appeared to be a carbuncle of the under lip. He was of a good constitution, temperate habits, and in the enjoyment of good health previous to the present attack. Four days before I saw him, he was supposed to have cut the lower lip slightly, and applied to it arnica. The inflammation commenced at this point, the lip swelled largely, became everted, had a livid color, was tender, hard, and the seat of a burning

pain. At several points there were small sloughy apertures, discharging thin pus. The constitutional symptoms were considerable but not sufficient to confine him to his room. The treatment consisted of free incision and yeast poultices to the lip, and sustaining remedies for the general system. Portions of the lip sloughed, but he recovered.

CASE 3.—Mr. W., aged 26, married, furniture dealer of good habits, and hitherto perfect health, discovered a small pustule on the under lip, near the right angle of the mouth, on the second of April. It was tender on pressure, and had a hard base, but attracted no other attention. During night the disease extended considerably, involving the whole lip, and the right side of the face, in a hard, livid and painful swelling. On the evening of the second day his physician first saw him, and found the lip greatly swollen, of a livid color, and the seat of a burning pain. He scarified the parts for the purpose of local depletion, and also applied leeches. The swelling continued to extend, involving the right side of the neck and face to a great extent. I saw him on the 7th, at 11 A. M. His symptoms were then most unfavorable, pulse 130 per minute, intermittent every seventh or eighth beat, weak and small; respiration rapid, moaning; skin warm and moist; urine free; pupils much dilated; mind clear. He complained of oppression about the chest, and had not been able to obtain sleep. Both lips were involved in the swelling; were hard, livid, and insensible; the whole side of the neck and face was similarly affected, the eye being nearly closed. The frontal vein was livid, red, and prominent, and the veins of the cheek were also visible as if distended. The treatment consisted of deep scarifications of the lips, and yeast poultices to the part, with anodynes and stimulants. I visited him again at six o'clock, P. M., and found him rapidly failing; treatment of no service. He died the same evening.

CASE 4.—I was called, April 10, to see Miss S., aged 30, occupied as a governess, of good constitution, whom I found laboring under the same difficulty as in the preceding case. Her history was almost precisely similar. Five days before, while in the possession of apparently perfect health, she first observed a small

pustule on the lower lip, just below the red line of mucous membrane; it was regarded as a small boil, and no attention paid to it. On the following day the pustule had enlarged somewhat, was hard, and had a livid areola, but she continued about her employment; she spent a feverish, restless night, and on the next day called her physician. The disease gradually extended, assuming the appearances already noticed, and for two days no danger was apprehended. Her symptoms now became much more unfavorable, and at this period I first saw her. She was lying in bed quite insensible; deglutition difficult; respiration laborious; right side of body paralyzed; lips large, everted, and cold; right side of face, neck and forehead swollen like the lip, hard and purple; right eye protruded; pupils dilated and insensible. On making an incision into the lip, the cellular substance was found filled with small deposits of pus, which were forced out on slight pressure. As she was moribund, treatment was of no avail.

From the history of the foregoing cases it is evident that this disease differs from erysipelas, for which it has in several instances been mistaken in its origin in a pustule, without a chill or other constitutional disturbance, the hardness of the swelling, its purple or livid color, insensibility, and absence of much pain. It differs from carbuncle, which in some features it resembles in the class of individuals which it attacks—they being young, temperate, of sound constitution, and in the previous enjoyment of good health—and in its rapidly fatal course. Carbuncle, on the contrary, occurs by preference in persons enfeebled by age or vicious habits. It differs again from true malignant pustule, to which in its origin it seems allied, by attacking persons who have not been affected by poisonous wounds, or who have been liable to the introduction of animal poisons into the system.

This disease would therefore seem to be peculiar, having many points of resemblance to other similar affections, but still not so closely allied to any one to warrant its classification under the same head. In every instance which has come under my observation, the pustule has been seated upon the lower lip, and from this point the inflammation has spread. In a fatal case related to me by a physician, in whose practice it recently occurred, the pustule was seated upon the side of the nose.

Although the nature and progress of the disease shew a vitiated state of the system, in no instance have I been able to trace the attack to the contact of poisonous matter, or its reception into the system in the food or drink. In every instance the patient has been in the enjoyment of good health, and the progress of the disease, though rapid, has excited so little local and general disturbance as not to excite alarm until a short time before its fatal termination. The general symptoms are of a typhoid character, the vital powers being evidently depressed either by the influence of the disease itself, or, which is more probable, the cause upon which the development of the disease depends

PRACTICAL THOUGHTS ON TOOTH DRAWING.

NO. IV.

BY O. T. CUSHMAN, D. D. S., COLUMBUS, GA.

[CONCLUDED.]

Now, with the key, success would have been more certain, because its rapidity of execution affords less chance for resistance. For *such* patients do I hold the instrument in particular reserve.

Some persons will suffer toothache many days; and as a desperate resort, to escape the torture of *another* night, will defer their long-contemplated visit to the dentist until the darkness of night is closing around. Under such unfavorable circumstances, with patients over-apprehensive and restless, it is prudent to resort to palliatives, and to decline operating in the twilight, or by candle-light, unless it be a simple case. The reputation of operators has unjustly suffered by the untoward results of attempting to extract teeth in such cases.

There are some persons whose teeth are so firm set, and bones so solid, that the operation of extraction is a very serious and doubtful undertaking. The force necessary to extract such teeth is more than double that of the average amount; and unless it be exerted nearly on a line with its insertion, will be apt to break either the tooth or socket, and thus increase the patient's calam-

ity. Such teeth pertain to strong, athletic men, and those designated "mountain sprouts," who enjoy a high degree of bodily health and vigor. They are unmistakable—large, thick, yellowish, and immovable to the fingers.

Their roots, which are long, broad and curved, after the crowns are broken off by decay or otherwise, generally remain for many years without giving rise to pain or disease, and are also immovable—apparently as solid as deep driven oak posts.

With acute toothache their owners suffer intensely, but are less subject to chronic attacks. The young dentist had best exhaust his palliatives on these patients, rather than confidently promise them easy and expeditious extraction.

I cannot respect those dentists who will not exemplify towards all patients, particularly those who are called to undergo this operation, the motto of "bear and forbear." The fee for tooth-drawing is, or ought to be, sufficient to ensure a liberal allowance of time, affability and sympathy.

In extenuation of the indecisive, sometimes provoking, manner of timid patients, there should always be kept in view the traditionary *legends* of the operation, which, from days of *Samson*, have invested it with such a terrible shroud of slaughter.

Enough of these horrors are founded on truth, but by far the greater bulk of them on fiction. They are injudiciously exaggerated, and kept alive by repetition.

It is thus that parents unwittingly intimidate their children; thus unnerving and unfitting them oftentimes, for the very endurance to which, as they must be aware, necessity will inevitably force them, in the rapid flight of time.

APPENDIX. The Editor of the *N. Y. Dental Recorder* (vol. VI. p. 181—1852) has manifestly aimed at my previous *Practical Thoughts*, the following comments:

"It is inexcusable carelessness when a dentist fractures a tooth through the sound part in attempting to extract it, unless it be the first or second time in his practice. It may be necessary to break a few teeth in the commencement of our operations, in order to learn their strength; but after obtaining that knowledge there is no excuse for ever breaking a tooth, except when it is so much decayed that the remaining strength cannot be correctly

estimated. No more power should ever be expended upon a tooth, than it is capable of sustaining without fracture, and to what purpose have we practised for years if our experience has not taught us to avoid such gross carelessness? In these difficult cases if sufficient time is taken and the tooth is wrenched and turned in every direction long enough it will finally loosen in the socket so that it can be removed without fracture.

If the patient will not stand this, wherein is he benefitted by having his tooth fractured at the neck and the fangs left remaining in the socket?"

* * * "If he (the dentist) fractures the tooth, he merits and receives only his (patient's) anathemas."

In reply to which, I submit to the judgment of the profession the foregoing authoritative opinions, facts, and practical cases, as instances of professional experience.

I also give the opposing testimony of one of the *Recorder's* neighbors, Dr. Bridges of Brooklyn, well known to the profession:

"It is not possible to succeed in removing teeth in every case, without breaking them.

* * We sometimes encounter teeth that we cannot by fair means remove."—*Dental Mirror* for 1844, p. 8.

And I enter my protest against the *Recorder's* "anathemas" on those who disclaim that degree of skill which comes not short of infallibility. The positive language of the commentator (if such he be) certainly seems to bespeak it for himself. But, were he tested only in the cases instanced in this *series* and I here repeat, that they are not of every day character, I am confident that his claim would have to be forfeited.

Will he please inform humble enquirers after truth, how every tooth can be "wrenched and turned in every direction long enough?" (We have read the similar directions given by ALBU-CASIS in the eleventh century.) Wrenched and turned in *every* direction! And long enough too! Delightful contemplation.

As "to what purpose have we practised for years," if *malgre*, occasionally some tortuous, erratic root persists in not leaving its socket with its crown, or fellow—why, I think that by the same rule, with equal consistency one might anathematize physicians, because they do not cure every case of cholera, or yellow fever.

"Wherein is he benefitted by having his tooth fractured at the neck?" &c. Without pretending to recommend this practice, I would say that, in a case of acute odontalgia, where such unavoidable accident followed the attempt at extraction, and brought away the nervous pulp, as probably most dentists have demonstrated in their practice, the *benefit* is about equivalent to the entire extraction of the tooth; as I should suppose the Recorder need not be informed.—*Dental Register*.

PROTRACTED DENTITION.

MESSERS. EDITORS :—The following case of protracted dentition, I extract from my note book, deeming it may be of interest to some of your many readers.

Mina Mondegal, a German girl of medium size, twenty-four years old, called some time since to have a cavity filled in the first molar of the upper maxillary; it had never pained her. On examination, I was surprised to find, in one of her age, a deciduous tooth, perfectly firm in the socket and but slightly decayed. On further examination, I found she still retained all of the temporary set except a lateral incisor of the left superior maxillary, which had been replaced a short time by a finely formed permanent one; a new lateral also had begun to make its appearance on the right side of the same jaw, the temporary one being still in its place, but loose, showing that absorption had commenced. There were no other permanent teeth in the mouth except the anterior molars of the upper and under jaws. She did not recollect when these made their appearance. The jaws were well formed, the teeth not crowded, but had spaces between them; the process was broad and full, indicating that it must contain at the same time both sets of teeth, which I have no doubt was the case.

Yours,

NEWARK, N. J.

G. F. J. COLBURN.

CHAPTER I.

OF THE DUTIES OF DENTISTS TO THEIR PATIENTS, AND OF THE OBLIGATIONS OF PATIENTS TO THEIR DENTIST.

ARTICLE I.

DUTIES OF DENTISTS TO THEIR PATIENTS.

Sec. 1.—A Dentist should not only be ever ready to keep his professional engagements, but his mind ought always to be imbued with the importance of his function, and the responsibility he habitually incurs in its discharge. These obligations are the more deep and enduring, because there is no tribunal, other than his own conscience, to adjudge penalties for his carelessness or negligence. Dentists should therefore be scrupulously loyal to their trust, reflecting that the ease, health, and no inconsiderable share of the happiness of those committed to their charge, depend on their skill, attention and fidelity. They should study also, in their deportment, so to unite tenderness with firmness, and condescension with authority, as to inspire the minds of their patients with gratitude, respect and confidence.

Sec. 2.—Every case committed to the charge of a Dentist should be treated with attention, steadiness and humanity. Reasonable indulgence should be granted to the mental peculiarities and caprices of his patient. Secresy and delicacy, when required by peculiar circumstances, should be strictly observed; and the familiar and confidential intercourse to which Dentists are admitted, in their professional relations, should be used with discretion, and the most scrupulous regard to fidelity and honor. The obligation of secresy extends beyond the period of professional services; none of the privacies of personal or domestic life, no infirmity of disposition or flaw of character, observed during professional attendance, should ever be divulged by him, except when he is imperatively required to do so. The force and necessity of this obligation are indeed so great, that professional men have, under certain circumstances, been protected in their observance of secresy by courts of justice.

Sec. 3.—A Dentist ought equally to avoid unfavorable prognostications and boastful promises, because they savor of empi-

ricism, by magnifying the importance of his services in the treatment of the case, and abusing the simple confidence of those who best deserve his sincerity. It is therefore a sacred duty to guard himself carefully in these respects, and to avoid all things, in word, action or manner, which have a tendency to bias the judgment or impose upon the feelings of his patient.

Sec. 4.—Consultations should be favored in difficult and doubtful cases, as they give rise to confidence, energy, and more enlarged views of practice, and eminently tend to liberalize the professional relations of practitioners.

Sec. 5.—Hygienic counsel within the proper province of the Dentist, concerning as it does those personal habits which are so prevalent and so offensive in the social life of our country, should be urged the more earnestly as rules of health, for the reason that they promote the minor morals of the patient. Advice, strictly professional, is never impertinent, and is generally authoritative and acceptable in proportion to its respectful boldness.

ARTICLE II.

OBLIGATIONS OF PATIENTS TO DENTISTS.

Sec. 1.—The members of the Dental Profession, upon whom is enjoined the performance of duties so important as theirs are to the community, and from whom are required the devotion of their best efforts for the welfare of those who require their services, have a right to expect that their patients should entertain a just sense of their reciprocal obligations.

Sec. 2.—The first duty of a patient is to select, as his Dentist, one who has received a regular professional education. In no trade or occupation do men rely upon the skill of an untaught artist; and in Dental Surgery, confessedly one of the most difficult and intricate of the arts, the world ought not to suppose that knowledge is intuitive.

Sec. 3.—Patients should prefer a Dentist whose habits of life are regular, and who is not devoted to company, pleasure, or to any pursuit incompatible with his professional studies and duties. A patient should also confide the care of himself and

family, as much as possible, to one Dentist; for a practitioner who has become acquainted with their peculiarities of constitution is more likely to be successful in his practice than one who does not possess such knowledge. A patient should apply for advice in the early stage of disease, and in what may appear to him trivial cases, that the remedial treatment may be completely successful; and as incipient diseases of the Dental system are open to very early detection by proficient in science, so protective and preventive treatment is even more certain and available than in any other branch of remedial medicine, and should be the more carefully secured.

Sec. 4.—The obedience of a patient to the prescriptions of his Dentist should be prompt and implicit. He should never permit his own crude opinions to influence his attention to them, or to excuse his negligence. Preventive and remedial measures are based upon physiological principles, whose agency is not always in apparent correspondence with the means employed to make them available.

Sec. 5.—Patients should always, when practicable, call upon their Dentist within the hours appropriated to consultation; they should keep their appointments with rigid punctuality; and they should respect his necessary times of refreshment, recreation and repose. A full practice is so laborious and exhausting, and interference with engagements so injurious, that a careful consideration for them ranks among the highest duties of the patient to the practitioner.

Sec. 6.—The unfavorable criticisms of friends and physicians upon the operations of the Dentist ought to be submitted to him for his consideration and explanation, before they are allowed any decisive influence upon the mind or conduct of the patient.

CHAPTER II.—ARTICLE I

DUTIES FOR THE SUPPORT OF PROFESSIONAL CHARACTER.

Sec. 1.—Every individual, on entering the profession, as he becomes thereby entitled to its privileges and immunities, incurs

an obligation to exert his best abilities to maintain its dignity and honor, to exalt its standing, and to extend the bounds of its usefulness. He should, therefore, observe strictly such laws as are instituted for the government of its members; should avoid all contumelious and sarcastic remarks relative to the Faculty as a body; and while, by unwearied diligence, he resorts to every honorable means of enriching the science, he should entertain a due respect for his seniors, who have by their labors brought it to the advanced condition in which he finds it.

Sec. 2.—It is considered derogatory to the dignity of the Profession to resort to public announcements, or private cards or handbills, inviting the attention of the public to particular methods of treatment; publicly to offer gratuitous advice, or to promise radical or extraordinary cures; or to publish cases and operations in the public newspapers, or suffer such publications to be made; to adduce certificates of skill and success, or to boast of cures and remedies. These are the ordinary practices of empirics, and are highly reprehensible in a regular Dentist.

ARTICLE II.

PROFESSIONAL SERVICES OF DENTISTS TO EACH OTHER.

Dental practitioners, their wives and children, have no just claim upon other practitioners for gratuitous services. They may be accorded, for such reasons as arise out of the relation and condition of the parties as individuals, but from the nature of such services, they cannot properly be demanded as a comity of the Profession.

ARTICLE III.

OF THE DUTIES OF DENTISTS IN REGARD TO CONSULTATION.

Sec. 1.—A regular Dental education furnishes the only presumptive evidence of professional abilities and acquirements, and ought to be the only acknowledged right of an individual to the exercise and honors of the Profession. Nevertheless, no intelligent, regular practitioner, who is of good moral and professional

standing in the place in which he resides, should be fastidiously excluded from professional fellowship; nor should his aid be refused in consultation, when it is desired by the patient. But no one can be considered as a regular practitioner, or a fit associate in consultation, who, in his practice, rejects the accumulated experience of the Profession, and the aids furnished by anatomy, physiology, pathology and organic chemistry.

Sec. 2.—In consultation, no rivalry or jealousy should be indulged; candor, probity, and all due respect should be exercised towards the Dentist having charge of the case.

Sec. 3.—A Dentist who is called upon to consult should observe the most honorable and scrupulous regard for the character and standing of the practitioner in attendance. The practice of the latter, if necessary, should be justified, as far as it can be consistently with a conscientious regard for truth; and no hint or insinuation should be thrown out which could impair the confidence reposed in him, or affect his reputation. The consulting Dentist should also carefully refrain from any of those extraordinary attentions or assiduities, which are too often practised by the dishonest, for the base purpose of gaining applause, or ingratiating themselves into the favor of families and individuals.

Sec. 4.—When a Dentist is consulted by a patient of another practitioner, in consequence of the absence or sickness of the latter, he ought to limit his interference to the necessary treatment demanded by the case; and when it has been only incidental, and not requiring his own continued attention, on return or recovery of the regular attendant, with the consent of the patient he ought to surrender the case.

EDITORIAL.

CORRESPONDENTS, SUBSCRIBERS, EXCHANGES, &c., are requested to direct all Communications relative to the financial or business departments of this journal to "SUTTON & RAYNOR, 609 Broadway, N. Y.;" and articles for publication, books for review, exchanges, reports of society meetings, and all correspondence relative to the editorial department, to "EDITOR OF DENTAL RECORDER, 139 Fourth Avenue, N. Y."

From a biographical sketch of Dr. R. D. Mussey, in the New Hampshire Journal of Medicine, we copy the following singular and somewhat dangerous experiment. It was undertaken with a view to throw light on the doctrine of the non-absorption of the human skin:

"He immersed himself for three hours in a strong infusion of nut galls, and then went into a strong solution of sulphate of iron, lying in that three hours more. No ink was found in the urine. He opened a vein in his hand to ascertain if the serum of the blood exhibited any thing peculiar. After obtaining about an ounce and a half of blood, it ceased to flow, and exhausted by his long immersion, Dr. M. sank faint upon the floor. The serum of this blood had a tinge slightly different from that of common blood, and was slightly coagulated—resembling very much the serum of common blood, in which a quantity of powdered nut galls had been stirred up and allowed to settle, leaving the inference, that some portion of the nut galls had probably passed into the circulation.

"The doctor was not disposed to repeat the experiment—but was a week or two in regaining his accustomed strength and activity."

We would call the especial attention of our readers to the articles adopted by the Pennsylvania Association of Dental Surgeons, upon "Professional Etiquette." They are valuable and important as rules for conduct. We should like much to see them generally adopted and acted upon by the Profession.

We copy from the News Letter a description of a case of retarded dentition, noticed in the practice of G. F. J. Colburn, Newark, New Jersey. We have met with a case within the past year somewhat different, though quite as singular. The patient, a young man of twenty, has, in the superior maxilla, the following arrangement of teeth: Two permanent central incisors—a wide separation between them; then comes a vacancy of about three lines on either side; then two temporary canines,

followed by another vacant space (of about half or three quarters of an inch); then come two temporary molars, one on each side; posterior to these, and adjoining each molar, we find a bicuspid. The jaw is remarkably small, giving to the face a shrunken or contracted appearance. The bicuspids, owing to the diminutive size of the jaw, occupy the relative position of the dens sapientiæ.

In the lower jaw we find two temporary central incisors, two permanent laterals, two permanent canines, and two bicuspids occupying the place of the second molar. From the appearance of the mouth of this patient we should judge that there were no teeth of replacement imbedded in the jaw.

A sister of this gentleman has no bicuspids, four temporary molars, and four permanent ones. One other sister lacks an eye-tooth, two others have complete sets, and one brother lacks a lateral incisor. It is worthy of note that, with the exception of the case first described, these patients have all of them hard and beautifully shaped teeth. And one of the sisters possesses a denture not only remarkable for its exceeding beauty of color, form and regularity, but for its wonderfully diminutive size, it being by far the smallest perfect set of permanent teeth we have seen.

DEATH FROM ETHER IN A DENTIST'S CHAIR.

We learn from Mr. Josselyn, of the Lynn Daily, the following particulars of the death of a female from ether, in that city, yesterday morning. It appears that a woman named Farley, wife of a carpenter of that name, accompanied by a female friend, went into the office of Dr. Addison Davis, a well known Dentist of that place, to have a tooth extracted.

The Dentist was about to extract it in the regular way, when the woman requested to have ether administered. To this objection was made by Dr. Davis, he stating that it would cost her seventy-five cents more. She pulled out some money, stating that she had enough to pay, and persisted that the ether should be given her. The doctor then inquired of her as to her state of health; if her lungs were in any way affected, &c. &c. She replied in the negative, when he proceeded to comply with her request.

After she had inhaled from the sponge awhile, he asked her if she could feel the pain in the tooth, and she replied that she did. He then held the sponge to her nostrils for a further brief period, noticing nothing unusual, and went to get his instruments. On his return, he found that her mouth was set. He immediately proceeded to give her air, and took other means to restore her. Mr. James Buffum, a well known citizen, came in, and physicians were sent for, but nothing availed: she revived for a moment, breathed a little, then died.

A coroner's inquest was held, and a post mortem examination of the body took place, when it appeared that the lungs of the deceased were considerably diseased; and the report of the examining physicians was that she, no doubt, died of congestion of the lungs, brought on by the inhalation of ether.

The female who accompanied the deceased, having substantiated the statement of the Dentist as to the persistent desire of the deceased to inhale ether, the jury returned a verdict exculpating him from all blame in the matter.—*Boston Traveller*.

ERRATA.—On page 66 of the March number, in the text of Fanchard, second line, for “nue” read “*que*.”

BOOK TABLE.

TREATISE ON THE USE OF A. J. WATTS' CRYSTAL GOLD. By Wm. H. Dwinelle, M.D., D.D.S.

This is the title of a an *extensively* gotten up pamphlet of some thirty pages, illustrated with wood cuts of instruments, operations, &c. &c. It is carefully and *effectually* written, with a due regard to the merits and interests of the author, concerning all of which we have something to say; but as we understand that “the Treatise” is to be re-published in the coming number of the American Journal of Dental Science, with *alterations* and *modulations* to suit the circumstances of the case, we forbear present comment, it being our intention to speak of *both editions* at the same time.

KOLLIKER'S MANUAL OF MICROSCOPIC ANATOMY.

We had intended to give to our readers this month, the first part of this author's description of the Microscopic Anatomy of the Teeth, but it is necessarily deferred to the next number. It will be found to require and *repay* careful perusal. It is also our purpose to add to this Prof. Huxley's paper alluded to in the last number of the Recorder. Our subscribers will then be able to judge for themselves concerning the points at issue between these eminent microscopists.

By the way, speaking of microscopists, we find in the London Quarterly Journal of Microscopic Science, an ably written and interesting article on the auditory apparatus of the *Culex Mosquito* by Dr. Christopher Johnson, of Baltimore, showing to an eminent degree, that gentleman's habit of close observation. Dr. J. having ascertained that the female mosquito was the most vigorous and musical of the two, and that the male was a sneaking, cowardly fellow, hiding himself away in dirty, un-com-e-at-a-ble-places, rarely venturing forth from his seclusion, and then only at dark for the purpose of seeking the “Madame”—came to the conclusion that the wing-like music of the former constituted his principal guide. This was of course a fact suggestive of ears, and upon careful study and examination, an auditory apparatus was discovered, dissected, and its anatomy, with distributions of nerves, &c., beautifully illustrated. This histological triumph can however be of no *practical* value unless some equally ingenious person discovers a method of stuffing the gentleman mosquito's ears with cotton, which being done, the speedy extinction of the species will prove the truth of the Dr.'s theory.

New-York Dental Recorder;

DEVOTED TO THE THEORY AND PRACTICE OF

Surgical, Medical and Mechanical Dentistry.

Vol. IX.]

MAY, 1855.

[No. 5.

CRYSTALLIZED GOLD.

[CONTINUED FROM PAGE 77].

In operations of this character, we should always commence by filling that portion of the cavity which opens upon the grinding surface; and the first pieces of gold should be condensed into the angle formed by the bottom of the cavity and that portion of the wall or side which is farthest from the corner or angle to be turned. For instance, if the approximal cavity should be upon the anterior surface of the tooth we would commence by filling up the angle at the posterior grinding surface, and *vice versa*. The gold should be so condensed as to form an inclined plane leading from the edge of the cavity down to the bottom, and towards its centre. This course should be persisted in until the gold *nearly* reaches the angle or junction between the two cavities, when the gold must be carried forward upon the bottom, thus leaving the plane more inclined than it would be if the first plan was carried out.

The patient should now be allowed to rest, and all preparations made for filling the cavity in the approximal surface. Extra precautions should now be made against the *incursions* of saliva, mucous secretions, &c. &c. It is our custom in these cases to take a roll of the bibulous paper and place it under the tongue, so as to cover the submaxillary and sublingual ducts, also to apply some of the paper, folded into flat wads or pledgets, so as to close the parotid ducts; then, after thoroughly drying the surface to which the gold is to be applied, commence

by introducing a mass of the heavier numbers of gold, condensing it rapidly with a medium sized plugger, and in a direction towards the root or neck of the tooth. When this layer is thoroughly consolidated, the angle formed by it and the inner wall of the cavity should be filled. *Outside* of this another layer should be added, and the angle again filled, and the process repeated until the last angle reaches the floor of the cavity in the grinding surface, and is continuous with the inclined plane of gold left at that point. We would now commence and fill up the remainder of the cavity, following the general directions given in a previous number of the Recorder, applying the gold wherever experience or convenience would seem to dictate. After the whole has been filled and tested with a finely pointed plugger, the extraneous gold may be removed with a file, and the operation finished in the usual manner.

In filling approximal surface cavities in the posterior teeth it will usually be found more convenient and safe to pack the first layer directly against that portion of the cavity nearest the gum; in fact to fill first that portion most liable to become wet. Where there is a wide separation between the teeth, this can readily be accomplished by using an ordinary round-pointed plugger with a notched or under-cut condensing surface. The separations between the molars and bicuspid require the use of a V shaped file; and such a file leaves a separation most admirably adapted for the convenient introduction and subsequent condensation of this form of gold. By filling completely the lower half (the half nearest the gum) of an approximal cavity, we leave a smaller cavity to be filled immediately above it; for what *was* the former half of a large, and in most cases shallow cavity, is now a cavity half the size externally, having the same depth, and from its situation (nearer the grinding surface) more easy of access, more readily kept dry, and, as a consequence of its greater depth in proportion to its superficial extent, much more convenient to fill. For these reasons alone we would always recommend that cavities of this nature should be filled first at those portions nearest the gum. Though there are others: one is, that the mucous secretions are always with greater difficulty removed from the surface of the gold than are the secretions from the salivary glands. Another reason is this: if we attempted to

fill the whole cavity gradually from the bottom (which is towards the centre of the tooth), toward the external opening, each layer of gold when condensed would leave a cavity of the same superficial extent as at first, but with a decreased depth, and consequently more difficult to fill. When it becomes wet, there is a greater extent of surface to be burnished and dried, and again made rough; and the nearer we approach the completion of the operation the more difficult it becomes to carry the gold crystals to that portion of the cavity where *perfection* is the *most* desirable — where there is the least space for working; where the vision is most intercepted, and the light imperfect; where there is more danger of its becoming wet, and from the worst kind of moisture, viz, “mucous secretions;” and where most fillings in approximal surfaces show their first signs of failure, namely, at that point nearest the gum.

With regard to filling cavities upon the lingual or buccal surfaces of teeth, but little in addition to the above need be said. The same general rules will apply where the cavity approaches the gum; that portion should be filled first, not merely stuffed with gold, but the material should be packed in and *thoroughly condensed* before the remaining portion is attempted. After this is done, the operation may be completed in the usual way.

Too much stress cannot be laid upon the importance of thoroughly condensing the gold after the addition of each layer. When the gold becomes wet, all that was not consolidated previous to the wetting is lost, and must be removed, unless the surface was burnished before the advent of the moisture. When this precaution has been taken, the uncondensed gold is protected; and after the moisture has been removed, the surface must be again roughened, and the operation resumed.

To those members of the Profession who have not made much progress in the use of crystal gold we would recommend a series of experiments with the material. The simplest and most practical method of carrying this into effect is to take the common pivot plate used for drawing down pivot wood. The holes in such a plate are readily filled with any material used for filling teeth, and the fillings can afterwards be forced out without injury. The same cavity can thus be filled successively with gold foil, or all the varieties of crystal gold, and the fillings after removal

subjected to a variety of instructive and interesting tests. We can safely promise that a few hours and dollars thus spent will amply repay any operator ambitious of excelling in this peculiar department of practice.

Our remarks upon this subject have now far exceeded the limits originally intended, nevertheless we believe we have not said too much. Crystal gold certainly gives us additional power for good or evil, according to the manner in which it is used. With care and judgment, it is a valuable assistant in the preservation of teeth; but if used carelessly or ignorantly, it is perfectly useless. In some cases it cannot be used without great difficulty; in many it can be used as successfully and as readily as foil; and in many cases its use can be advantageously carried to an extent beyond the reach of any operator who makes use of foil only.

It was the writer's intention to have finished this article in the last number of the Recorder, but it has, as our readers perceive, been extended to the present. We are now requested to continue it in the coming or June number, and to allude more particularly in our next to some of the objections that have been brought forward against the use or adoption of these preparations by the Profession, since this series of articles was commenced; and thus it is that "the end is not yet."

[TO BE CONTINUED.]

From the New Hampshire Journal of Medicine.

INSTRUCTIONS FOR USING BENUMBING COLD IN OPERATIONS.

BY JAMES ARNOTT, M.D.

Although there are several modes of employing intense cold as an anæsthetic, I shall here confine myself to the most simple and generally applicable of these, viz: the placing a frigorific mixture immediately on the part, or with the interposition only of a piece of thin gauze or tulle containing it. This piece of gauze (formed for the sake of convenience into a small net or bag), the components of the frigorific mixture, a canvass bag, or coarse

cloth, a mallet or flat iron, a large sheet of paper, a paper-folder and a sponge, constitute all the articles required for congelation. The common frigorific of ice and salt will generally possess sufficient power; when greater is required, saltpetre or an ammoniacal salt may be added. Every systematic work on chemistry contains tables of frigorific mixtures, as well as instructions for making ice, which, when but a small quantity is required, may be thus artificially procured almost at as little expense as from the fishmonger.

A piece of ice the size of an orange, or weighing about a quarter of a pound, will be sufficient for most operations. It is put into a small canvass bag or a coarse cloth, and beaten, by the quickly repeated strokes of a mallet or flat iron, into a fine powder. As it is important that the powder should be fine, it is not ridiculously minute to state, that the bag should be turned in various directions during the pounding, and that the pounded ice, squeezed into a cake by the iron, should have its particles again separated by rubbing the bag between the hands. Instead of pounding it, the ice may be pulverized by the ice-plain.

The pounded ice having been placed on a large sheet of paper, any loosely cohering may be separated by a paper-folder, and the unreduced larger bits removed. Beside it, on the paper, about half the quantity of powdered common salt is placed, and they are then quickly and thoroughly mixed together, either by the ivory folder while on the paper, or by stirring them in a gutta percha or other non-conducting vessel. If the mixture be not quickly made, the extreme cold of one part of it may again freeze other parts into lumps.

The mixture is now put into the net (which may be conveniently supported and preserved from contact by placing it in the mouth of a jar crewer), and as soon as the action of the salt on the ice appears established by the dropping of the brine, it is ready for use.

In applying the net, the part which is to be benumbed should be placed in as horizontal a position as possible; and it is well to raise the net for a moment every three or four seconds, in order to secure the equal application of the frigorific, and watch its effect. If the part be not horizontal, it may be necessary to hold the gauze bag containing the frigorific against it by the hand,

covered with a cloth ; and if the net does not cover the whole of the surface to be benumbed, it must be passed to and fro over it. A moistened sponge placed lower than the net will absorb the fluid escaping from it ; or this, on some occasions, may be allowed to drop into the basin placed beneath.

The procedure, as now described, may appear not only troublesome, but as requiring much time. The truth, however, is, that after one or two trials it is unlikely that any mistake will be committed ; and the time occupied by the preparation of the mixture and its application should rarely exceed five minutes. So simple is the apparatus required that, in cases of emergency, I have frequently procured every thing but the ice at the house of the patient. The application of a solid brass ball which has been immersed in a freezing mixture, or a thin metallic spoon or tube containing this (with or without ice) is quite as easy.

The effects of this mode of applying intense cold are various, and their succession is as follows :—When a well-prepared frigorific mixture is brought in contact with the skin, a certain degree of numbness is immediately produced. The skin is rendered paler than natural, but there is hardly any disagreeable sensation produced, not even of cold. In about half a minute the whole of the surface in contact with the frigorific becomes suddenly blanched, evidently in consequence of the constriction of its blood-vessels. This change is accompanied with a feeling of pricking or tingling, such as that produced by mustard. If the application be continued, a third effect is produced ; the adipose matter under the skin is solidified, and the part becomes hard as well as white. The tingling is increased by this ; but, unless in the most sensitive parts of the body, as the hand and lower part and front of the forearm, it is rarely noticed or complained of. Although this uneasy sensation soon subsides, there will if the temperature of the part be not allowed gradually to return, and if the cold has reached the stage of congelation, be a renewal of it on the adipose matter again becoming fluid. This gradual return of the natural heat is ensured by placing a little powdered ice on the part, or a thin bladder containing ice and water.

The question how far the refrigeration should be allowed to proceed, or which of the three stages just described should be reached, has been answered differently by different operators.

In many of the slighter operations, either of the first stages will be sufficient, and the measure just mentioned for effecting a gradual return of heat will then be unnecessary. If congelation of a fat is produced, and the operation is proceeded with before it returns to its fluid state (which is of advantage when it is important to prevent bleeding), there may be required, as Mr. Paget has observed, a modification in the handling of the scalpel; not only, however, is there a certainty that the insensibility, both in degree and continuance, will be then sufficient, whether the incision is made before or after the fat again becomes fluid, but (what is of equal importance) that antiphlogistic effect is secured, which prevents those consequences which so often prove fatal under common circumstances. On other points there have been great differences of opinion, though probably the results have not been so different as might have been expected. Dr. Wood, of Cincinnati, and M. Richard, of Paris, use frigorifics differing from each other in power, as much as 30 degrees Fahrenheit; and Mr. Ward applies the frigorific for only one minute, while Dr. Hargrave applies it for five. Perhaps the longer congelation is continued (and it may safely be continued for double this period) the deeper and the longer continued the produced anæsthesia may be; but it were unreasonable to prolong an operation inconveniently in order that there shall be absolutely no feeling. In exhibiting chloroform the surgeon is not authorized to give a very large and very dangerous dose in order that the insensibility shall be absolute. But if it should appear that a certain continuance of congelation is necessary to ensure its antiphlogistic power, this would be a sufficient reason for always so continuing it.

As respects the credit of the two anæsthetics in the deeper operations, not their real character or merit, chloroform has this advantage over cold, that whereas, from the obscure expression of pain during the patient's unconsciousness from chloroform, and his forgetfulness of it afterward, it is generally supposed that he suffers none; so, on the other hand, there may be greater complaint made in such operations under cold than is justified by the degree of pain felt, owing to the patient's disappointment (if the matter has not been explained to him beforehand) in experiencing any degree. It is certain that in the majority of opera-

tions, or those only involving the skin, the insensibility produced by cold is greater than that produced by the ordinary doses of chloroform; and on this account Dr. Wood thinks it ought, in all suitable cases to be preferred; but this is a small advantage compared with its perfect safety, and the power it possesses of preventing dangerous inflammation. To its superiority in these important respects must be added the facility with which it may be administered, the retention of the patient's consciousness, and the absence of his dread of sudden death, as well as of the sickness and headache that generally follow chloroform, the freedom from embarrassing hemorrhage, and the assistance which the patient may give to the operator in assuming convenient postures, instead of its being necessary, as in using chloroform, to have an assistant to repress his involuntary movements and struggles.

A few words may be added, in conclusion, on certain misapprehensions that have existed in relation to the use of cold as an anæsthetic.

Dr. Wood states, that although congelation has, in most instances, fully answered his expectations, it has at other times disappointed them. If it be expected that the whole of the pain of a deep operation, as the amputation of a limb, or the excision of a large tumor, is to be thus prevented, the expectation is unreasonable. Unless the frigorific were applied after, as well as before, the incision of the skin (and it often may be so with advantage), or unless it were employed of much greater strength, or for a longer time, than has been usual, and after measures have been taken to suspend the circulation through the part, this could not be effected; and the patient ought himself to decide whether, in such an operation, he shall endure the comparatively slight degree of pain caused by cutting the deeper parts, for the advantage of perfect safety, or undergo the risk of chloroform in order to have the benefit of that degree of insensibility (for it is seldom complete) which the ordinary dose of this substance is capable of producing. This risk might indeed be lessened were he to have such a moderate dose exhibited as is usually given in midwifery, after the severe pain from the cutaneous incision has been prevented by cold; and this would probably be adequate to the purpose; but as fatty degeneration or idiosyncrasy cannot be foretold, there is danger in every dose. A death from chloro-

form in midwifery was lately reported in an American journal ; and in the nearly fatal case, occurring in France, alluded to in a preceding note, the dose was small, and was intended as in the midwifery practice, to produce partial insensibility without suspending the consciousness.

Whether chloroform is used or not, I am confident congelation will soon be considered indispensable in every important operation, as a preventive of erysipelas and phlebitis. The fact ascertained by Dr. Fenwick, and other statistical inquirers, that one third of the amputations of limbs prove fatal from inflammation leaves no doubt on this subject.

Others of Dr. Wood's failures can be differently accounted for. When the part to be operated upon is inflamed, or the circulation through it is vigorous, "a degree of cold only a little above the freezing point of water" is far from being sufficient. A frigorific of greater strength than five degrees below zero (the strength of ice and salt) may then be required, and it must be kept in contact with the skin until the desired effect is produced. There ought to be no failures in this respect, as there are in the use of chloroform. If the part be sufficiently refrigerated, insensibility of adequate degree, and continuous, is certainly produced.

It has been mentioned as a disadvantage of cold, that its application is painful. In parts which are naturally very sensitive, or have become so from disease, there may be considerable smarting, when the third effect, or actual congelation, is suddenly produced ; although even then what the patient feels is little when compared with the headache and sickness often caused by chloroform. Under these circumstances, congelation should be gradually produced ; but ordinarily, there is no occasion for graduation of temperature.

It is unnecessary to refer again to the notion at first entertained by some, that the redness produced by congelation is symptomatic of inflammation. It arises from a state of the blood-vessels incompatible with inflammation. So far from causing this condition, there is little doubt that, however valuable intense cold may be as an anæsthetic, it is as an antiphlogistic that it will be chiefly prized, or as a means of preventing or immediately subduing, with perfect safety to the patient, every inflammation within its reach.

EXTRACT FROM PROF. ARTHUR'S VALEDICTORY.

We are not one of those who imagine that any ultimate good results from the publication in scientific journals of introductory or valedictory addresses delivered usually before a promiscuous collection of admiring friends, itinerant loungers and lovers of instrumental music. Such addresses are more frequently *made* to gratify the public taste, than to aid the graduate or elevate the profession, and unless they contain important facts or valuable suggestions, no editor is justified in filling up the pages of his journal with them, to the exclusion of more legitimate matter. We believe that our readers will find sufficient that is *good* in the following extract from Prof. R. Arthur's address to warrant our quoting it. We would request a careful perusal of the latter clause, as it tends towards removing a very general false impression now existing among the members of the Profession, viz.: that private pupilage and Collegiate Dental education are antagonistic.—[ED. REC.]

“In the first place, my friends, now in the very outset of your career, determine that you will practice your profession liberally; it will do more to ensure success, believe me, than the narrow-minded, selfish policy which throws a drag upon general advancement. Associate freely with all honorable gentlemen you may meet; impart freely to them any thing of value which may occur to you; scorn the miserable practice of keeping any thing secret for your own exclusive benefit, or from appropriating exclusively the profits of any discovery in your profession.

“But whilst you associate freely with all honorable members of your profession, avoid intercourse with those who are dishonest, and who remain wilfully ignorant. Do not recognize them as members of the same calling. Show, as far as you are able, to the public, that your profession is not in any way responsible for their deceptions and injurious practices. Do not hesitate to state clearly and frankly your opinion of any of their practice which comes under your hands, when good is to be accomplished by it. Do all you can by imparting correct information to your patients, so to enlighten them with regard to our Profession as to enable them to detect the more glaring impositions which are practiced. There is scarcely a more important duty which you can perform than this; and it is the most certain way of breaking down the system of imposture which prevails so extensively in

this country. But in endeavoring to do this, be careful to avoid making a display of your technical learning. Use as little as possible the terms employed in your profession, but not familiar to the community, and say in plain, simple language all you have to say. Intelligent people, the class most desirable as patients, are not to be imposed upon by these things; and even if they have reason to confide in your skill in practice, will secretly laugh at you for your sapiency.

"But, whilst you condemn bad practice, be careful to give full and hearty credit to that which is faithful and good. It is a short-sighted policy which supposes we are benefitted by disparaging others in any case—particularly in our profession. All you can do to add to the general confidence of the community in the value of the resources of our profession, will tend to increase your own practice.

"Before leaving this part of my subject, there is one important matter which I will bring to your attention, it is this: Every good practitioner, as he desires to discharge his obligations to the Profession, and regards the good of the community, ought to feel it his duty to do his part in the way of instructing worthy young men who show a fitness for the Profession. Besides collegiate instruction, we regard private pupilage as important, if not essential, to proper instruction in dental surgery. Although great facilities are presented to the student for practice in our institution, skill in practice can only be acquired in time—the mind may be crammed with a mass of information on a variety of subjects in a short time—although no man will regard such a plan a desirable one—but there is no royal road to facility of manipulation, time only can give facility in this way. Remember, too, in many of these cases, where young men desire to enter our Profession, if they are refused by the better class of practitioners they will fall into the hands of the incompetent, and eventually, the injury done by such persons will be incalculable. I know that to the dentist in full practice it is a thankless task, for he cannot in any way expect remuneration, except in the satisfaction of having contributed toward the advance of his profession, and the necessary return which this will yield him in the increased confidence of the community. The good accomplished by such an act is inestimable."

ALLOYS.

BY GEORGE WATT, M.D., D.D.S.,

Read before the Mississippi Valley Association, February 23d, 1855.

Having been appointed to read an essay at this meeting of the Association, I propose to offer you a few remarks on the general properties of alloys.

The term alloy, though once more limited, means a compound of any two or more metals. It is still a matter of dispute with some whether metals combine chemically, or whether their particles are mechanically mixed in the formation of alloys. It is known to all that some unite much more readily than others. Gold and platinum, for example, unite far below the melting point of the latter, while silver and iron are united with difficulty.

This subject, though somewhat neglected, is of great importance, as each alloy is, in reference to the arts and manufactures, a new metal, both on account of its physical and chemical properties. An extensive field here lies open. Only a few alloys have been studied by the chemist, and still fewer have been practically employed. Slight changes often constitute valuable improvements in these bodies, and there is no end to their modifications.

Metals do not unite with each other in the solid state. Assuming that alloys are chemical combinations, this is easily explained, their affinity being counteracted by the force of cohesion; and if they are mechanical mixtures, the case is equally clear; for the ultimate particles of the metals must be separated to some extent in order to commingle. Two metals will in some cases combine, when but one of them is liquified, as when brass is formed by the immersion of copper in melted zinc.

Though metals appear to unite with each other in all proportions, yet it is probable that they tend to combine in a definite ratio, for several atomic compounds of this kind occur native. The native gold of the auriferous sands, for example, is an alloy with silver, in the ratio of one equivalent of silver, united with four, five, six and twelve equivalents of gold, but never with a fractional part of an equivalent. But the alloys being generally, as it were, soluble in each other, this definiteness of combination is not observable in most cases.

The alloys, like the metals, possess metallic lustre, conduct heat and electricity, are, to some extent, malleable, sonorous, elastic, and ductile, and are sometimes susceptible of crystallization. They often differ materially from the elements composing them. The hardness of a metal is generally increased by being alloyed; it is therefore frequently more elastic and sonorous. Alloys are generally less malleable and ductile than the metals composing them. Formed of two brittle metals, they are always brittle; of a ductile and brittle one, they are generally brittle, and are sometimes so when formed of two ductile metals.

The density of an alloy may be either greater or less than the mean density of its elements. Alloys of gold with tin, zinc, bismuth, antimony or cobalt are examples of the former; those of gold with silver, copper, lead or iron, of the latter.

The fusibility of metals is greatly increased by alloying, as is well illustrated by the alloy of platinum and arsenic, and the well known alloy composed of 8 parts of bismuth, 5 of lead, and 3 of tin, which melts at 212° instead of 514° , the mean of its elements. This increased fusibility is of great practical importance in the arts, and of special use to the mechanical dentist, as will be noticed presently.

The color of an alloy cannot be correctly inferred from the color of its component metals. The alloys of copper with zinc and arsenic are familiar illustrations of this fact.

The tendency of metals to unite with oxygen is augmented by being alloyed; and this tendency is often, if not always, the result of galvanic action. According to Faraday, 100 parts of steel alloyed with 1 of platinum is dissolved with effervescence, in dilute sulphuric acid, too weak to act with perceptible energy on common steel. This can only be explained by assuming that the steel is rendered positive by the presence of the platinum. The same thing is illustrated by the action of dilute acid on commercial zinc.

This tendency of the alloys to unite with oxygen, and the readiness with which metals oxydize at their melting point, render some precautions necessary in the process of alloying. In combining tin and lead, it is common to cover the surface of the metals with rosin, oil or other substance, having an affinity for oxygen greater than that of the metals. The same general principle, modified to suit circumstances, will answer in all cases.

There is also some difficulty in obtaining uniform alloys from metals differing much in specific gravity. Every dentist has observed this in gold alloyed with silver and copper. Adequate stirring or re-melting is the remedy in such cases.

In uniting several metals, difficulty is often experienced from a want of affinity between two or more of them. This is best overcome by uniting in pairs those which combine most readily, and afterward uniting these with each other. For example, a small quantity of lead added to brass, produces a useful alloy for some purposes. This, however, would be difficult to accomplish directly, but it is readily effected by first combining the lead and zinc, and then adding melted copper.

Many alloys are important and interesting to the dentist. We will notice a few of these. Pure gold is too soft and flexible for the purposes of mechanical dentistry. This condition is overcome by alloying it with platinum, silver, copper, &c. In alloying for plate, some prefer silver, some copper, and others, as Professor Harris, a mixture of both. A very good plate is obtained by alloying pure gold (or ordinary coin) with equal parts of silver and copper, reducing the gold to the required carat. Gold alloyed with platinum is strong and elastic, and is therefore valuable for clasps and backings, a less amount of substance affording the requisite strength. One part of platinum to 10 or 12 of gold, will, in general, give satisfactory results.

The increased fusibility of metals when alloyed enables us to unite two metals, or different pieces of the same metal, by a process called soldering. In the preparation of solders, several points require attention. They must be more fusible than the metal or metals to be united, and must be composed of metals having a strong affinity for those to be soldered together. Each metal, therefore, to a certain extent, requires a solder peculiar to itself. A very convenient, though not a very fine, gold solder is made by adding to any quantity of American coin one-third its weight of silver and one-fourth its weight of copper. This is about the same as Harris's No. 1, and answers all ordinary purposes. Many formulas might be given, but those wanting them know where to get them.

Silver solder is the only alloy of that metal of use to the dentist. If silver plate be used, as it may be for temporary work in

healthy mouths, the metal should be pure. This may be soldered with silver coin, or with any of the finer silver solders.

Some of the alloys of copper are interesting and useful to the mechanical dentist. Of these we may mention the ancient bronze, composed of tin and copper; and brass, the well known alloy of copper with zinc. The former of these makes an excellent male cast; but the high temperature at which it fuses, and its affinity for oxygen at the melting point, render it rather inconvenient for ordinary use. From its hardness, the plate will be "driven home" without any flattening of the prominences on the ridge. When used, it should be melted under rosin, powdered charcoal, pine sawdust, or some similar combustible substance, and, like all other alloys, should be taken from the fire and poured as soon as fused.

Brass, when pure, consists of 64 parts copper to 32 of zinc, being a definite compound, composed of 1 equivalent of zinc and 2 of copper. The brass of commerce is an uncertain compound, containing tin, lead and other alloys. This is a convenient substance in the laboratory for various incidental purposes not directly pertaining to mechanical dentistry. Cheap and servicable blow-pipes are constructed from it; and every dentist should be skilled enough to make his own, as a majority of those in market are unfit for use. It may be soldered with silver coin, any of the silver solders, or the common brass solder, composed of 2 parts brass, 1 of zinc, and a minute quantity of tin. It is sometimes used for casts, but is not reliable, on account of its shrinkage in congealing and cooling.

Commercial zinc is an alloy of zinc with iron, lead, cadmium, arsenic, &c. On account of its cheapness, and because it shrinks but little in congealing and cooling, it is much used for casts. It answers a tolerable purpose for ordinary cases, but its shrinkage is often a serious annoyance. The thing needed for casts is a convenient and cheap metallic substance which *expands* in congealing, precisely as much as it shrinks in cooling from the point of congelation to the ordinary working temperature. An alloy composed of 4 parts of zinc to 1 of tin, fulfills these indications. It forms a very hard cast, and may be immersed in lead without the ordinary protection of whiting or lamp-black. Of the alloy of zinc with copper we have already spoken.

Equal parts of tin and lead make a good alloy for female casts. It is harder than either of its constituent metals, melts at a lower temperature than either of them, and as it shrinks less in cooling, gives a more correct counter cast. The attention of the Profession was directed, some years ago, by Dr. Van Emon, to an alloy of tin and antimony, composed of, perhaps, 5 or 6 parts of the former to 1 of the latter. This is a good article for casts, can be used with lead for the female casts, and shrinks but little, if any, in cooling. It is easily oxydized, and should therefore be fused with the proper precautions, and taken from the fire as soon as melted. From our own experience, we consider the zinc and tin alloy above referred to preferable to this or to any other we have used.

Two parts of lead, one of copper, and one of antimony, is the formula for Lassigne's type metal. It makes a tolerable cast, expands slightly in congealing, but is rather brittle.

Of the alloy of platinum with gold we have already spoken. With steel it forms a tough, strong alloy, an excellent material for excavators and pluggers. The best proportion is said to be 1 part of platinum to 100 of steel. None of its other alloys are of importance to the dentist.

The only remaining alloys interesting to the dentist, that we now think of, are the mercurials. Of these we have nothing to say at present, and we hope nothing further need be said. Our views on the subject are known to the Society. We hope the whole matter may rest.

KÖLLIKER'S MICROSCOPICAL ANATOMY.

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SPECIAL HISTOLOGY. OF THE TEETH.

§ 137. The *teeth* are hard organs inserted into the alveolar processes of the jaws, which although to some extent identical in structure with bone, and in other respects clearly allied to it, must, from their development, be regarded as modifications of the mucous membrane.

In every tooth we must distinguish *the tooth proper*, and the

soft structures; the former consists of a free part, the *crown*, and of an imbedded portion, the simple or multiple *fangs*, whose special forms are treated of in anatomical works; they contain internally a small cavity, the *pulp cavity*, which extends through each fang as an elongated canal opening at its point by a simple, or more rarely double (Havers, Raschkow) fine aperture.

Among the soft parts, we may enumerate first, the *gum*, *gingiva*, a dense mass formed by the union of the mucous membrane and of the periosteum of the jaw, which surrounds the lower half of the crown or the *neck* of the tooth. Secondly, the *periosteum of the alveolus*, which unites the tooth very closely with the alveolus. Finally, the *pulp*, a soft vascular and nervous mass, which occupies the cavity of the tooth, and is connected with the *periosteum of the alveolus*, through the aperture in the fang.

The *proper tooth* consists of three distinct structures. 1. The *dentine*, which constitutes its principal mass, and determines its general form. 2. The *enamel*, which forms a tolerably thick investment to the crown; and 3. The *cement*, which covers the fang externally.

§ 138. The *dentine* or ivory is yellowish-white, and translucent or transparent, in thin sections of a recent tooth; when dry, it has a silky or satiny aspect, in consequence of the reception of air into a special system of canals. It is considerably harder and more brittle than either the cement or bone, but, on the other hand, yields in these qualities to the enamel. With the exception of a very small spot in the root, the dentine forms the sole boundary of the pulp cavity, and in an uninjured tooth it is never exposed, inasmuch as it is covered, even upon the neck of the tooth, by a thin layer of enamel, and when this ceases, by cement.

The dentine consists of a *matrix* and of a multitude of canals which traverse it, the *dentinal tubules or canals*. In the recent tooth, the former is, even in the finest sections, quite homogeneous, without the slightest trace of cells, fibres, or other elements. After the extraction of the calcareous salts from the dentine, it exhibits, however, a great tendency to tear up into coarse fibres, parallel to the dentinal canals; from these, finer fibres of 0.002-0.003 of a line may be detached, their irregular form, however, shows them to be artificial products, and in fact they owe

their existence simply to the circumstance, that the dentinal canals run close together and parallel to one another through the dentine. The matrix exists in all parts of the dentine, but not every where to the same amount. In general, there is less of it in the crown than in the root, and in the neighborhood of the pulp cavity than in that of the enamel and cement.

The *dentinal canals* are microscopic tubules of 0·0006–0·001 of a line (in the roots some reach 0·002 of a line), which commence by open mouths upon the wall of the pulp cavity, and traverse the whole thickness of the dentine to the cement and enamel. Each canal has a special wall, rather less in thickness than its diameter, which can only be observed in transverse sections (and then not always) as a narrow, yellowish ring surrounding the cavity; in longitudinal sections, on the other hand, it is almost entirely invisible. During life, the canals contain a clear fluid, and they cannot, therefore, readily be detected in recent preparations; it is different in dry sections, when they become filled with air, and appear separately as black lines by transmitted light, and by reflected, as silvery threads. On account of the immense numbers of the dentinal canals, so great in some situations that their walls are almost in contact, dry sections appear milk-white, and if not very thin, are quite unfit for microscopic investigation, unless the air has been previously expelled from the canals by any clear and not viscid fluid.

The dentinal canals present certain constant peculiarities in their *course* which is not straight but *wavy*, and in addition, they present numerous *ramifications* and *anastomoses*. Each canal describes, in general, two or three large *curvatures*, and a very great number (as many as 200 in 1 line, according to Retzius) of *small curvatures*, which are sometimes more or less strongly marked, and occasionally have even the appearance of actual zigzags, or spiral windings. The *ramifications* of the canals appear in the first place as *divisions*, and then as true *ramifications*; the former are very frequently to be met with close to the origin of the tubules from the pulp cavity, and are almost always bifurcations, of such a kind that one canal divides at an acute angle into two of almost the original diameter. These divisions may be repeated 2–5 times altogether, and even still oftener, so that at last, 4–8–16, and even more canals, proceed from a single one. The canals, already somewhat narrowed

after division, then run close together and tolerably parallel, towards the surface of the dentine, and excepting in the root, branch again only in its outer half or third; the ramifications appearing, in the root, as fine twigs given off from the principal canal, while in the crown they more resemble dichotomous divisions. In the latter case, they are for the most part rare, in the former, it is otherwise; the branches, which are usually close together and given off at right or acute angles from the trunk canal, having sometimes the appearance of a feather, sometimes that of a brush, the latter being most common when the twigs are large and undergo further branchings. According to their more or less frequent ramification, are the *ends* of the dentinal canals more or less fine; frequently appearing merely as excessively fine, pale lines, like fibrils of connective tissue, and finally disappear. When they are distinct, they either become lost upon the surface of the dentine in a granular layer, which we shall have to consider presently, or they enter the innermost portions of the enamel and cement, or finally they are connected in pairs by loops in the dentine (*terminal loops of the dentinal canals*). The *branches* of the principal canals are, almost always, very fine and usually simple, though sometimes ramified; they serve, as may be best seen in the root, where they are excessively numerous, to connect neighboring or even distant canals; such anastomoses having either the form of simple, transverse canals or of loops. The ultimate branches present the same relations as the forked or simple terminations of the principal canals, and end either free or by loops, in the dentine, or are continued beyond it.

The chemical composition of dried dentine is, according to Von Bibra:

	Molar of a Woman of 25.	Molar of a Man.	Incisor of the same Man
Phosphate of lime, with some fluoride of calcium,	67.54	66.72	
Carbonate of lime,	7.97	3.36	
Phosphate of magnesia,	2.49	1.08	
Salts,	1.00	0.83	
Cartilage,	20.42	27.61	
Fat,	0.58	0.40	
	<hr/> 100.00	<hr/> 100.00	
Organic substances,	21.00	28.01	28.70
Inorganic substances,	79.00	71.99	71.30

In fresh teeth, Pepys found 28 p. c. cartilage, 62 inorganic matter, 10 water and loss; and according to Tomes, teeth, after the pulp is removed, lose in drying $\frac{1}{8}$ — $\frac{1}{17}$ of their weight. The organic basis of the teeth, which may readily be obtained by treating them with hydrochloric acid, is identical in all respects with that of the bones, and is readily changed into gelatin by boiling. This so-called cartilage of the tooth retains the exact form of the dentine and its external structure also; the tubules, however, are seen with difficulty. If it be macerated in acids or alkalies until quite soft, the matrix undergoes incipient solution, *but the dentinal tubules, with their walls, offer greater resistance, and may be readily and abundantly isolated.* By still longer maceration, all is dissolved. If teeth be heated to redness, or treated with caustic alkalies, the inorganic portions likewise retain the form of the tooth. It follows, then, that the same intimate mixture of inorganic and organic parts occurs in the teeth as in the bones, with which they so closely agree in their chemical compositions.

[TO BE CONTINUED.]

PREPARATION OF CAVITIES FOR FILLING TEETH.

BY A. S. TALBERT, D.D.S., LEXINGTON, KY.

Delivered before the Mississippi Valley Association of Dental Surgeons, February 23, 1855.

GENTLEMEN OF THE PROFESSION:—By *appointment not preference*, I appear before you to read a paper. While I appreciate the honor thus conferred upon me, I distrust my abilities to *entertain* or *instruct* even a *few* of the large number present, many, nay, *most* of whom are *older* than myself. I will not indulge in fairy fields of fancy; I will not elaborate on new theories, or harp upon the downfall of exploded ones, nor yet will I endeavor to please the imagination by a delightful play upon words (“without knowledge;”) believing, as I do, that *practical* truths, however plainly clad, are better calculated to fulfill the ultimate objects of our Association. Profiting by the intelligence of my audience, I need not give in detail a description of the various classes of teeth—their development, their anatomical structure, their chemical analysis, their relation one to another,

and as a whole to the general system ; nor need I speak of their division into front, lateral, lingual, and other surfaces ascribed by anatomists to their various parts, for with all these you are equally familiar. I propose therefore to arrange all cavities into two classes — those that require the use of the file, and those that are accessible without this instrument.

Since the venerable Key has been laid aside, there is no instrument found in our cases that imparts so invariably on its appearance to our patients, that instinctive shudder, that indescribable shrinking from its use, as does the file. If the skillful limner would draw accurately the outlines of distorted visage, let him place his canvass in front of one of our operating chairs. Let the operator on a *cold* day, dip his cold dull file into cold water, let him commence on the sensitive teeth of a nervous patient, and as the old file begins to warm by its friction, and to clog by its accumulation, and the temperature of his energies begins to rise in like proportion, and he hastens his hand lest he may not get another opportunity—let the artist seize his pencil, and if he draw his picture true to nature, he will, to say the least of it, have a “*wry face!*”

There is no instrument that has suffered so much abuse, or that has been the subject of so many and such ridiculous imputations. If teeth are badly filled and their fillings fall out, their loss, and the consequent decay of the teeth, are attributed to their having been filed ; and not unfrequently sound teeth have decayed rapidly ; because teeth in a distant part of the mouth had been filed by some itinerant Dentist !! Who, that has not heard the remark repeatedly from his patients, “My teeth were all sound, except the least speck in one of the front ones, when a certain Doctor — filed them, and filled it,—his filling came out, and since then they have *all decayed!*” —forgetting that they might have *all decayed* just the same if she or he had never seen a Dentist. As calomel gives them “*miserics*” in all their bones, so filing gives them *miserics* in all their teeth. Hard, however, as the nether millstone, it has cut its way through every obstacle in the hands of an intelligent profession, till its quondam objectors have dwindled into a respectable minority, whose influence no longer deters the enlightened Dentist from the commencement and completion of his operation according to the

dictates of his own judgment. Having dipped a clean file into tepid water, if the front incisors above be decayed on their lateral surfaces, the operator will stand behind, and a little to one side of his patient, commencing with a thin flat file, each cutting edge of equal thickness; and as the operation advances, he will once, twice, or thrice, as the case may require, dip again his file in the tepid water to wash away the adhering portions of the filed tooth. In like manner, thick ones will be used till the objects are attained. Care being taken to leave sufficient shoulders of healthy enamel or bone upon the necks of the teeth to prevent their changing positions, as they might otherwise do, some *approaching*, others *receding* from each other.

By these shoulders a better shape may be retained in the teeth than if the desired object were attained by means of a wedge-shaped file. After the file, a sharp instrument, such as is used in scaling and cleansing teeth, will be required to round the edges of the enamel, and smooth their surfaces.

[Teeth filed in the manner above described will leave upon each tooth a *square* shoulder that will eventually cause trouble. We believe that more teeth have been lost in consequence of this method of filing, than the file has saved since it was made a Dental Instrument. Square shoulders or abutments should never be left upon the teeth. When it is considered important to leave *any* shoulder, it should always be rounded off gradually so that no angle will be presented, and so that no portion of the filed surface can offer inducement for the lodgement or retention of foreign matter. A bevelled edged file is the most convenient instrument for finishing such a filed space so far as a desirable shape is concerned. All filed surfaces should be polished with silex, pumice, Arkansas stone, or some other convenient and suitable material.

We consider the safest and most desirable method of filing the anterior teeth to be that generally adopted by operators in this section—namely—to carry a thin double *safe sided* file directly between the teeth, and as far up as the gum, leaving no shoulder at all; then to take a bevel-edged file with one safe or smooth side and cut away the posterior angles left by the first file; this makes a V shaped space between the teeth, open towards the tongue, but small in front. The shape and appearance of the teeth is not injured, the fillings can be put in from behind, and will not show. The teeth can then come together touching only upon the anterior edge of the enamel and always remaining open behind; the action of the tongue keeping them in perfect condition.]—ED. REC.

The objects of the file are two-fold—to make *room* and to remove such portions of enamel as may be deprived of its vitality. False pride on the part of the patient, accompanied by false delicacy on the part of the operator, should not deter him from attaining to both of these, for on them depends the success of all that are to follow.

The preparation of a cavity in a tooth is a fixed fact, as well as its filling. Unlike the Homœopathist, we cannot give a few globules of the essence of the tenth part of the shadow of *nothing*, combined with a little sugar of milk, and *let nature* do the work for us, while we “steal her *thunder*” by playing upon the *credulity* of our patients.

Having attained the required space, and removed such portions of the enamel as may be necessary, we are prepared to *enter the cavity*. Three instruments only are necessary—the hatchet, the hoe and the *hard drill*. Right and left curved excavators; excavators bent upon themselves in two or three directions, as we often see them, are good for nothing in removing decay, and should be discarded.

[TO BE CONTINUED.]

EDITORIAL.

We find by our exchange that the Mississippi Valley Association of Dental Surgeons held their Eleventh Annual Meeting in Cincinnati, February 21st. We should judge from the report that the meeting was an interesting and instructive one; and their whole proceedings seem to have been conceived and carried out in a spirit of harmony that augurs well for the future usefulness of the society.

We are strongly in favor of Dental Associations, and believe that Dentists can more readily fulfil the duty they owe their Profession by communicating the results of their experience, investigations, &c. to each other than in any other way. It is obvious that valuable communications can only be made *generally* useful by extensive circulation; hence addresses upon practical subjects, when made before Associations, are second in value only to communications made through the Dental journals. We would like to see a Dental society in every State, and as many more local ones as can be supported.

The prize of one hundred dollars, offered by the Mississippi Valley Association, for the best essay calculated for popular distribution, was awarded to George Watt, D.D.S., M.D., of Xenia, Ohio.

A number of interesting papers were read, of which we give two to our readers. The first, by Dr. Watt, is a good practical paper, containing nothing very new or original; but there is more real information to be found in it than we usually see in so small a space.

The other, by Dr. Talbert, is most decidedly Western in its style and contents—plain, blunt, and open, although the mode of practice recommended does not accord in all respects with that usually adopted with us on the “sun-rising” side of the mountains; still the paper is a good one, and our readers will, doubtless, peruse it with interest. We have dropped a few notes between its paragraphs, stating wherein our views differed from those advocated by Dr. T. It is said that “in a multitude of counsellors there is wisdom;” and it is upon this principle we act; for however widely operators may differ, it is always worse than useless to allow objections to *any course* of practice to be merely dictated by a fault-finding penchant.

We learn also from the Register, that the above Association adjourned, to meet on the 8th of May, the day upon which the American Society of Dental Surgeons is to hold its session.

While thanking the editors of the News Letter for their expression of interest in our success, we may as well remind them, that the error they allude to concerning the number of students and graduates of the Philadelphia College, was corrected in the March number of the Recorder; but we do not see the necessity for the last clause of the paragraph.

Dr. B. A. Satterthwaite, of Lima, Ohio, is attempting to perfect the plan recommended by Dr. Loomis of mounting teeth upon a porcelain base, thus doing away entirely with metallic plates for whole sets of teeth. It will, we think, prove a waste of time, so far as the accomplishment of the legitimate object is concerned, though experiments of this nature often lead to important incidental results. We hope these gentlemen may meet something of this nature; if not, their investment of time and labor will never pay. The material is entirely too brittle, too bulky, too heavy, and too weak to answer the purpose. Our opinion has been asked concerning the merits of Dr. J. K. Rickey's Patent method of mounting teeth on atmospheric plates. We have never tested it; and unless our views of its utility are much changed, probably never will. It will enable the mechanical Dentist to fasten on the teeth, without the aid of a blow pipe. But it is by no means a perfect preventive of warping. In fact the force required to rivet the extra plate with any chance of security would spring very many *unannealed* plates; and even then the teeth are not as strongly attached to the plate as they would be if soldered; and even soldering often fails when single teeth are used. The solution of gutta percha and chloroform, used to make the interspaces air-tight and sweet, is useless for the purpose; for as soon as the chloroform evaporates, the gutta percha must fail to occupy the space, the decrease in bulk being very great. To be sure the chloroform is sweet, but when it goes it carries its sweetness with it.

The following "Card" was not received in time to be inserted in its proper place in this No., but, knowing the unusual amount of interest felt in relation to the subject, we give it to our readers as an EXTRA :

A CARD.

The Dental Profession have already become aware, no doubt, of the result of the suit between Dr. John Allen and myself, recently tried in the Circuit Court of the U. S. for the Southern District of Ohio. Lest they may be injuriously misled with reference to the decision, I desire to make this statement. The validity of the patent remains untouched by the verdict, which was a general verdict of "Not Guilty" of the infringement charged. The only questions involved in the issue, decided by this verdict, are those which were raised with reference to the sufficiency of the specifications attached to the patent, and the alleged infringement by the defendant.

The verdict of the jury must have been based on the belief either that the specifications were insufficient, or that there was not sufficient proof of infringement. The Patent remains, as to the question of its validity, as it did before.

I desire also to state that the unpleasant controversies between John Allen and myself, which led to the suit, have been amicably reconciled, since its termination; and, that while I announce, that my own private and professional engagements make it impossible for me to engage in teaching the benefits to be derived from my system of manipulations in the employment of a dental substitute, Dr. John Allen is fully authorized to combine with his new system, under his patent, any advantages he or the public

may find in any ideas peculiarly my own. I therefore cheerfully retire from all controversy, and recommend him to the Profession for those *oral and practical instructions* in continuous gum work, without which, but few can practice it successfully or advantageously.

The compensation which he charges, is small, compared to the value of the instructions, and will be a much cheaper and safer method of obtaining the right to pursue the practice, and the information and skill necessary to pursue it profitably, than the certain expense and trouble, and uncertain results of defying his rights as Patentee.

“ Quantum Suff., nuf ced.”

WM. M. HUNTER.

CINCINNATI, OHIO, May 29, 1855.

New-York Dental Recorder ;

DEVOTED TO THE THEORY AND PRACTICE OF

—Surgical, Medical and Mechanical Dentistry.—

Vol. IX.]

JUNE, 1855.

[No. 6.]

CRYSTALLIZED GOLD.

[CONTINUED FROM PAGE 100.]

In the last number of the Recorder we promised our readers to reply to the objections that have been made to the adoption of the preparations of crystal gold—since our series of articles upon the subject was commenced.

The most extended notice we have lately seen of this subject, is that contained in the Dental News Letter of April. The article is in reply to remarks that appeared in the January number of the Dental Register, over the signature of J. T., and is signed by the senior editor of the "News Letter."

With regard to that portion of the document in question, which relates more particularly to the strictures of J. T. we have nothing to do. We can have no sympathy or fellowship with the man who claims and holds membership with a liberal profession, who is an acting member of an association having for its object the elevation of that profession and the diffusion of useful knowledge pertaining to it, among its members, and who yet, for the sake of his own pecuniary interest, is ready, and willing, and anxious to keep, and *does keep* to himself, a secret of such importance to his profession as that of the manufacture of crystal gold. We can see J. T. in but one of two lights, viz: that of the man who occupying a public position as member of a liberal profession, betrays the interests of that profession for the sake of the "thirty pieces of silver;" or, as the man who, while infringing upon the patent of another, seeks to hide his guilt by proclaim-

ing that he has discovered a new process to be yet further developed, and then made public at a proper time—i. e., when he can make nothing more out of it. We think that our author (J. D. W.) erred in replying to his attack, but of that he was of course the best judge, and had a perfect right to act his own pleasure in the matter.

But let us return to our subject, viz: the objections that have been raised to the use of crystal gold. In a previous number of the "News Letter," the editor raises an objection to its use that is entirely new to the profession, viz: that solid gold fillings were bad in consequence of their want of porosity. He says, "It is believed by some, that a plug must be impervious to dampness; this cannot be, or if it were, it would not be necessarily a perfect plug; dampness must penetrate it to some extent, or the dampness will force around the plug and displace it sooner or later." "We know well that a distinguished operator in this city loses more *hard* plugs than *soft* ones on that account."

[This must be true to a certain extent, for if any are lost on this account, *it must be the hard ones.*]

We must, however, take issue with our author on this point. If, as he leaves us to infer, the cavities in the cases alluded to, were properly prepared, it must have required a considerable force to expel them, the *harder* the plug the greater the expelling power. We are not yet acquainted with the theory of human physiology that will account for any such hydraulic pressure in the dentinal tubuli, and until some such theory with ample sustaining evidence be produced, we must be excused if we even more than doubt the existence of any such power. But this is not all. If a gold filling admits moisture or dampness to penetrate its substance from within outwardly, it must necessarily permit a like fluid to penetrate from without in, towards its centre, and even to the dentine itself—such a result would at once preclude the possibility of protection to the tooth. All such fluids while penetrating a plug are out of the circulation, they are not under the control of vital influence; they are, nevertheless, animal fluids composed originally of the proper chemical constituents and must necessarily share the fate of all such fluids when placed under similar circumstances, viz: they must change—become decomposed—and prove in the end offensive and irrita-

ting ; in fact, just such fluids as gold fillings are intended to keep out of cavities in order that the teeth may not continue to decay. Nothing is more offensive than a soft plug which has been permeated by the fluids of the *mouth* for a length of time ; every operator is acquainted with this fact—and yet all plugs that permit the fluids of the *teeth* to permeate them must have the same fault.

To assert that gold fillings will allow fluids, or to quote more correctly, “dampness,” to escape from within and not enter from without, would be neither more nor less than to assert that gold fillings when put in as our author wishes, possess that peculiar property known as exosmose which only occurs in certain animal and vegetable structures. Such an assertion becomes essential to the theory advocating permeable plugs. Will it ever be made ? We think not. We believe that our reasoning against this class of fillings will be substantiated by the experience of most operators, as it certainly is by most, if not all of the authorities of note ; it is not even our mode of reasoning, but is rather the regular orthodox faith ; it has never been questioned or doubted, and certainly it has never been disproved. If, then, permeable fillings are no protection for the reasons above given, and impermeable fillings are no protection for the reasons given by our author, what is the object ? Where is the utility of filling teeth at all ?

So much for the hydrostatic theory. It was worth while to notice it earnestly, calmly, and thoroughly, inasmuch as it was thus advocated by “one who is by many and deservedly considered one in authority.” It was the more worthy of notice in this article, inasmuch as it was made use of to show the fallacy of filling teeth with crystal gold, for our author says, “A foil plug will not be broken up by such permeability, and a sponge plug will.” As the force of this statement depends entirely upon the value of the theory supporting it, and as we have shown, that permeability is not only a non-essential but an absolute objection, and injury, we are at a loss to perceive the advantage that foil possesses in this respect over sponge, or more correctly speaking, crystallized gold.

We are asked for an explanation of the loss of the *hard* fillings alluded to. If he wishes our individual opinion we should ascribe it to some slight imperfection of the cavity—some defect in its shape which might have escaped the notice of the operator and his *observer*, it is possible too that the first operator may

have used in these cases the coarser numbers of gold foil, these are in all cases more difficult to adapt to the exact form of the cavity than the lighter numbers, and though they can readily be made into very hard and beautiful fillings, they are insecure in consequence of the imperfection in their adaptation, and this is more particularly the case in such cavities as are mentioned by way of illustration in the April number of the News Letter, viz: lateral and approximal cavities. As a natural consequence, a material more readily adapted to the shape of a cavity, whether smooth or rough—regular or irregular—shallow or deep, will, by overcoming the difficulty, if it possesses the other requisites, prove a better substance for filling teeth. In the previous number of the Recorder we gave our reasons for believing that in the majority of cases, crystal gold is that material; it is in precisely *these* cases that crystal gold is most desirable. For the majority of cavities in the grinding surfaces of teeth, and for many large and deep cavities in other situations; where the walls of the cavity contain sufficient strength we use gold foil as directed by Prof. Arthur, but for lateral, buccal, and all shallow cavities, we use crystal gold for the reasons we have given.

Our author sums up his objections to crystal gold, as follows:

1st. "The coarser preparation of sponge gold is too hard and brittle, and requires too much pressure to condense it."

2nd. "The finer preparation is too loose and bulky, and requires too much time to pack it into so small a bulk as a plug, *and the preparations are always ranging between these extremes.*"

We have taken the liberty of italicising the last sentence, in order to draw the attention of our readers more particularly to the complete refutation it gives to the objections that precede it; in fact, it leaves us very little to say. It may not, however, be unworthy of mention, that we heartily agree with our author in the foregoing—having discarded entirely the No. 8 preparation of Messrs. Taft and Watt, and very seldom indeed, finding occasion to use the No. 1 of Messrs. A. J. Watts & Co. The last in consequence of its great bulk, and the first because it is not sufficiently plastic, owing to its density or rather the coarseness and harshness of its structure.

3rd. "It is unhandy as it can only be used with the plyer or rough-ended instrument."

All instruments are unhandy until we become accustomed to their use—the longer we use them the less unhandy they seem. All instruments are liable to the same objection, *no matter what the material used*. We are not aware that their *rough points* render them any worse in this respect; as for the plyers, we have discarded them in our general practice, occasionally we find them *convenient*, and use them under these circumstances.

4th. "It deteriorates too much by transportation, retention or exposure, and handling while in use; and frequent annealing to keep it in condition finally spoils it."

With regard to its deterioration by "transportation, retention, exposure, and handling," the same objections can with equal truth be made against foil. Care should always be taken to avoid trouble in this direction; there is no excuse for carelessness, and our experience convinces us that foil has no advantage over crystal gold in this respect. With regard to the last objection, "that frequent annealing to keep it in condition, finally spoils it," it has no weight whatever. There is no use in annealing the gold more than once. The proper way of using it is to break off from the mass as much as may be required for immediate use, and anneal it; it is a useless waste of time and material to anneal a quarter of an ounce, when only a twentieth is required.

Crystal gold should generally be annealed before using it. We think it works more readily after the process in most cases, but the necessity of annealing the *whole mass* every time we desire to use a *small portion* only, has not appeared to us.

5th. "It is injuriously affected by the dampness of the mouth, whether the saliva is in contact with it or not."

There is much truth in this statement; it constitutes one of the greatest objections to its use; in some cases it cannot be overcome, without the greatest difficulty, but in the majority of these cases the extra time and labor spent in avoiding and counteracting it will more than repay both patient and operator. • We have alluded to this difficulty in our previous articles upon this subject, and stated what our experience dictated as the best means of surmounting it.

6th. "There is no certainty when a good plug is made with it, and it may look like a good plug when it is not."

This objection applies with equal force to all materials used for

filling teeth. It can only be obviated by an infallible judgment, a requisite that is not possessed by any man in the Dental Profession or out of it. No better proof of this is needed than the history of the operations alluded to by the author, both in foil and crystal gold. It would seem that both materials failed however secure they may have seemed at first.

The one, "a distinguished operator in our city," having in all probability, used gold foil for many years, failed to put in durable fillings with his accustomed material. The other, perhaps still more eminent, and having doubtless an equal experience in the use of *foil*, fills a few cavities with *sponge* gold "as well as he knew how," and also fails! Really! this may be a remarkable coincidence, but we don't see wherein crystal gold suffers by the comparison.

7th. "It requires, according to it's advocates, too much skill to use it properly."

We have not the honor of an acquaintance with the advocates alluded to, and shall leave them to prove their own statements. We will content ourselves with stating our belief that a Dentist cannot be too skillful in the use of any material required in his profession, or in the practice of any of its departments; and that skill in the use of any particular material, or instrument, or in the performance of any new operation, or the administration of any new remedy, is only to be obtained by time, perseverance, experience and discrimination, and we must here repeat that it will not do to condemn a principle because an attempted illustration of it has failed through faulty manipulation.

8th. "A lack of perfection in the preparation in any requisite, renders it entirely useless."

This applies equally to foil or anything else used for filling teeth, and the same answer applies with equal truth to No. 11. No. 10 being repeated and enlarged upon in No. 12, only serves to swell the *number* of objections.

No. 12.—"The merits claimed for it as a good substance for plugging seem to depend upon such small circumstances or conditions as to render it extremely doubtful whether it is ever in proper condition for successful use." If these "circumstances or conditions" are so very "small" as to render them unworthy of being mentioned by name, it is certainly not worth while for

us to guess at them, and we must be excused if we "follow the footsteps of our illustrious predecessor," and passing them by

"Leave no record of their fame."

"And moreover, the term welding as used in urging its use as a superior substance for plugging is calculated to deceive the operator, as it is incorrect in speaking of the union of particles of gold in plugging a tooth. The property of welding being confined to a limited number of metals of which gold is not one. Welding also requires a temperature approaching that of fusion to cause the union of the particles and pressure also, and can take place under no other conditions; it is therefore absurd to urge that property of metals to support it as a reliable form of gold for our purpose."

If our author will consult some of his authorities, he will learn that potassium can be welded at common temperatures. This of itself breaks down his bulwark, for it seems that a high temperature is not essential. Its development properly depends upon the nature of the material and *the condition it is in*. In most metals which have been discovered to possess this property, an increased temperature is necessary to produce the requisite condition, but even then they cannot be welded without pressure. It thus appears that pressure—i. e.—mechanical force is essential to the process in *all* cases, and that a high temperature is not. Platinum is welded by being first converted into *spongy platinum*, it is then heated and pressed into a mass, then baked in an oven, and then hammered or rolled as may be required. The process is quite different in the case of iron, and very different in that of potassium.

It is a very difficult matter to correctly define the term welding. We consider it to be the mechanical integration of the atoms or particles of metal which form the surfaces in contact, to this we may reasonably add the force or power called the attraction of cohesion, both combining to form a union between the pieces welded that would be as strong, as coherent, and self-sustaining as the natural strength of the metal under ordinary circumstances. As a property; welding would be comparatively useless except for increasing the bulk of a metallic mass, were it not for the power we possess of restoring the malleability of the welded pieces by subsequent annealing; we thus resolve two or more

pieces of metal into one large one and by annealing *after* the hammering process or welding has been accomplished, we restore the mass to usefulness by developing its malleability.

If our definition is incorrect, we will readily acknowledge our indebtedness to any one who gives us a definition that will better bear the brunt of criticism.

If it is correct, then welding can be accomplished with crystal gold, and at common temperatures. To be sure, it is brittle when thus welded, so it is after being rolled, and like other metals which have been welded, and thus made brittle, it can by annealing, be again made malleable and even ductile. But our author says "that gold is not one" of the metals that can be welded. Here then, we are at issue—though we consider that crystallization is essential to its development; when in this form we can unite and integrate the crystals so that they become in fact one mass that cannot be separated at the original point of juncture, the union as strong as the metal itself, subject to the same laws. The *density* the same, made brittle by pressure, rendered malleable by heat, subject to all the changes and processes that affect or pertain to pure gold that is solid.

The development of this property is dependent upon this peculiar formation as we have said. Crystal gold is a recent discovery. All the applications and uses that may be made of it have not, we think, been developed. In the present progressive state of chemical science, it is a dangerous experiment for a man to use negative assertions for argument. He ought not to say that a certain thing cannot be in consequence of its not having been noticed, or that it is not because it has not been discovered or developed. Dr. Dionysius Lardner lectured in this city, comparatively a few years since, upon the impossibility of crossing the ocean by steam. The arrival of a steamship a short time after, placed him in rather an awkward position. He was honest, and doubtless argued solely from established facts; giving no heed to facts that might be, and which eventually were established.

And now, as our author asserts that gold does not possess welding properties, we will here edge in our claim as discoverer. We assert that under certain circumstances, (named above,) it does possess them. If our theory of welding is correct, we think we have proved the point; if not, give us "information." "Facts we want, not discussion" or "argument."

From this point our author proceeds to speak of the "peculiar properties possessed by some metals, when in the state of a porous spongy mass, of condensing within their cavities many times their bulk of gases, particularly of oxygen." He states his conviction that crystal gold possesses this property in a greater degree than gold foil, which may be all true, and we agree with him that it accounts in some degree for its deterioration from exposure. He does not, however, throw *any light* upon the *remarkable fact*, that, while holding the gold in the flame of a lamp, (the manner in which it is most conveniently annealed,) as we always do previous to filling the cavity, that the oxygen is very apt to leave *instantly*; but he does say "that it is evidently impossible to expel the gases perfectly from the porous mass when converted into a plug, inasmuch as it is impossible to destroy its porous condition by mechanical pressure in the mouth, although the plug may appear solid to the eye; hence the brick dust formation in the body of the plug." To all of which we would only reply that nothing can be more useless for preserving teeth than sponge gold *fillings*. We use sponge, or more correctly, crystal gold, for making *solid* fillings—not such as appear solid to the eye—but which will bear examination by a high magnifying power, without being shown to be porous. The arguments used above will not apply to such a filling, and consequently are not entitled to consideration. If, however, proper means are not used in performing the operation, and in making the plug solid, the result will be not softening, for that will already exist, but absorption of moisture, literally *permeability* and its results; it will become a useless and offensive plug, and "*brick dust formation*" will undoubtedly be the result, for that is neither more nor less than spoiled crystal gold, either half condensed or wholly wet, perhaps both. We have seen somewhere a slight and *slighting* allusion made to the peculiar corky color of the fracture of hard crystal gold fillings. We would take this occasion to state that the description, however made, answers precisely to the color and appearance of the recent fracture of all pure gold. It is simply due to the exceedingly small size of the spicula and their relative confusion of position, thus preventing a due reflection of light, and, of course, failing to produce to the naked eye, the usual color of gold; to this is due the usually dull undecided color of crystal gold in

mass; a magnifying glass enables us to see the reflecting surfaces more distinctly, and the color when seen through such a medium is natural; increasing in brilliancy, to some extent, by an increased magnifying power.

Our author winds up by alluding to its liability to contain mercury, and after a short but summary summing up, considers that "it does contain the elements of its own destruction."

We alluded to this point in the first of our series of articles upon this subject. We have nothing further to say upon it. The arguments there brought forward still hold good; when they are controverted we shall either acknowledge it or bring forward better ones *if we can*.

We should think the manufacturers would speak upon this point; if they intend to do it, we hope they will do it *personally*, over *their own signatures*, and not *hire* it done.

And now, to conclude a very long article, or rather a series of articles, we would state that while we cannot coincide with Dr. W. either in his premises or deductions, that we have a high appreciation of the honesty and earnestness with which he has pursued his course, and surely no one will question his fearlessness in advocating his new theory of permeability.

KÖLLIKER'S MICROSCOPICAL ANATOMY.

[One vol. 8vo. Published by Lippincott, Grambo & Co., Phila.]

SPECIAL HISTOLOGY. OF THE TEETH.

[CONTINUED FROM PAGE 116.]

The apparent *walls* of the dentinal tubuli, which are commonly visible in transverse sections (Fig. 184), are not the actual walls of the canals, but rings, which result from our invariably viewing a certain length of the canals in the always more or less thick sections, their undulated course giving the walls a greater apparent thickness than they really possess. If in any transverse section the apertures of the canals be exactly brought into focus, we perceive, instead of the dark ring, only a very narrow yellowish border, which is what I consider to be the actual wall. That such is the case, appears from the examination of transverse and oblique

[*To face page 112.*]

Fig. 183.

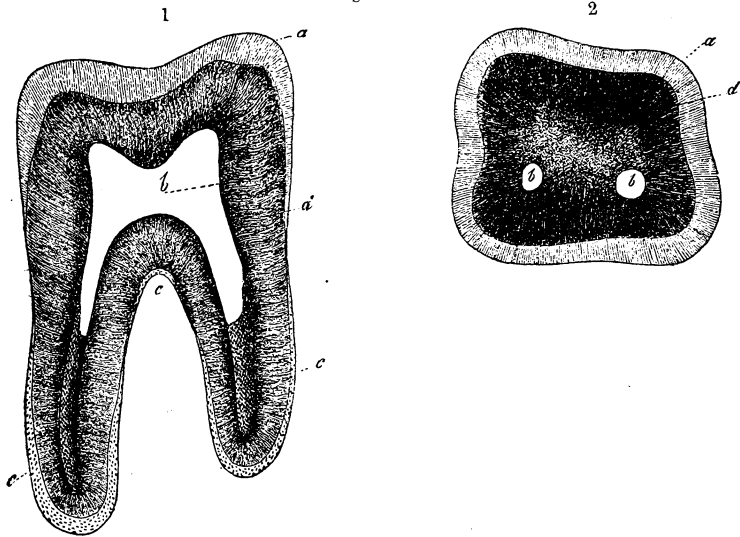


FIG. 183. — Molar tooth (human); magnified about 5 diameters: 1, longitudinal section; 2, transverse section: *a*, enamel; *b*, pulp cavity; *c*, cement; *d*, dentine, with its canals.

Fig. 184.

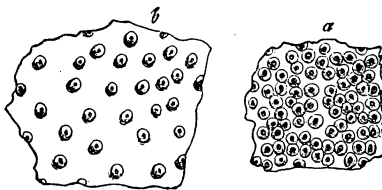


FIG. 184. — Transverse section of dentinal canals as they are commonly seen, magnified 450 diameters: *a*, canals very close together; *b*, more dispersed.

FIG 185. — Dentinal tubules from the root, magnified 350 diameters: *a*, internal surface of the dentine, with scattered canals; *b*, their divisions; *c*, terminations with loops; *d*, granular layer, consisting of small dentinal globules at the boundary of the dentine; *e*, bone *lacunæ*, one anastomosing with dentinal canals. From Man.

Fig. 185.

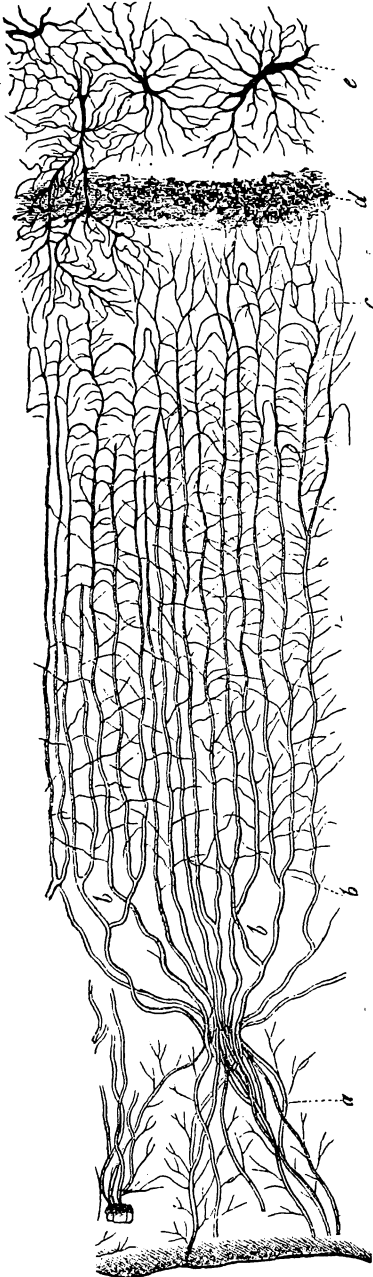


Fig. 186.

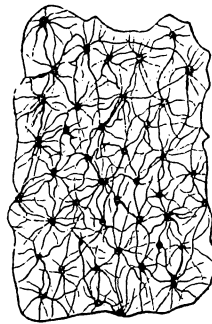


FIG. 186. — Transverse section through the dentinal canals of the root, *a*, in order to exhibit their excessively numerous anastomoses; magnified 350 diameters. From Man.

sections of canals filled with fluid, in which short, yellow tubules and small rings of almost the same diameter as that of the cavities of the canals, may be clearly recognized.

The *dentine* occasionally presents indications of lamination in the form of arched lines running more or less parallel and at different distances, often quite close together (Fig. 187); which in transverse sections appear as rings, and are especially distinct in the crown. These, the *contour lines* of Owen,* are not the same with the glistening, indistinctly defined striæ observed by Schreger, which run exactly parallel to the pulp cavity, and arise from the primary curvatures of the dentinal canals, and which are the expression of the laminar mode of deposit of the dentine. In animals they are at times singularly beautiful, especially in the Cetacea and Pachydermata (Zeuglodon, Dugong, Elephant), and also in the Walrus. Here, as well as in fossil teeth, we very frequently observe a breaking up of the dentine into lamellæ (Owen), indications of which may be found also in fresh human teeth, and in the dental cartilage.

Fig. 187.

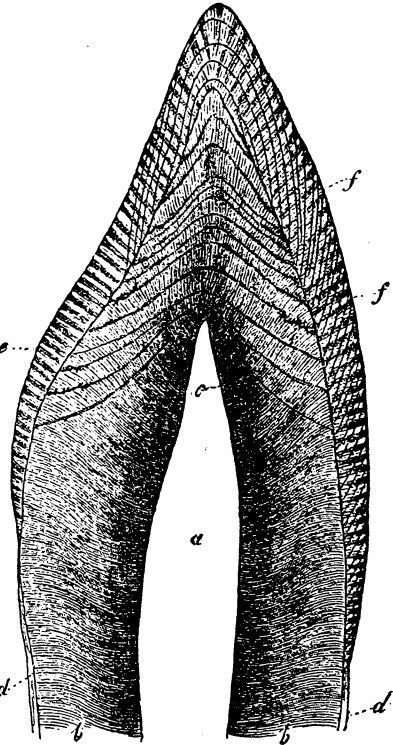
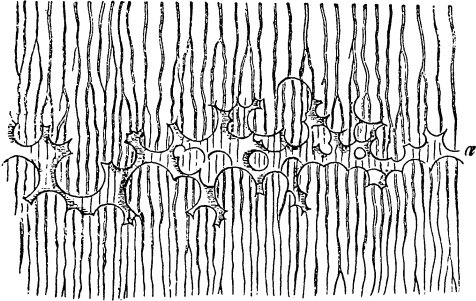


FIG. 187.—Perpendicular section of the apex of an incisor tooth (human), magnified 7 diameters: *a*, pulp cavity; *b b*, dentine; *c*, arched contour lines, with interglobular spaces; *d d*, cement; *e*, enamel, the various directions of the fibres being indicated; *f f*, lines of color of the enamel.

* [This is not exactly correct. The term "contour lines," as used by Professor Owen, ("Report of British Association" for 1838, p. 135, and "Odontography," pp. 460, 464, §11), includes both descriptions of markings mentioned in the text, but is more especially employed for Schreger's. The ordinary contour lines, in fact, are stated by Professor Owen to proceed from "a short bend" of the tubuli "parallel with the outer contour of the crown;" from these, the Professor distinguishes the "strong contour lines," in the ivory of the elephant's tusk, as being produced by "strata of extremely minute opaque cellules." It should be observed, however, that Retzius had long before drawn attention to these peculiar striæ. In his admi-

Upon the crown, the dentinal canals not unfrequently pass for some distance into the enamel, and expand, here and there, into larger cavities (Fig. 191), which should perhaps rather be regarded as pathological. Similar not quite normal formations are the *interglobular spaces* in the dentine itself (Fig. 188). Czermák

Fig. 188



has conferred this name upon certain very irregular cavities, bounded by globular processes of the dentine, which are, it may be said, never entirely absent in the teeth. In the crown they are found most frequently in the neighborhood of the enamel, and often form a thin curved layer, extending along its whole inner surface, which, upon close examination, is seen to be composed of a multitude of thin layers, receiving the ends of the contour lines (Fig. 187). They also occur, however, more internally, but always in longitudinal sections, in lines which correspond with the contour lines. The spaces are sometimes very wide, intersecting or interrupting in their course many dentinal canals; sometimes they are very small so that only a few canals are touched by them. In the former case, their limits are formed by distinct globular

FIG. 188.—A morsel of dentine with dentinal globules and interglobular spaces filled with air between them; magnified 350 diameters.

able memoir, published in Muller's Archiv. for 1837, he says, p. 507, "In the incisor teeth of the horse, also, many less transparent striæ running parallel with the *cavitas pulpæ* may be seen, like the annual rings in the trunk of a tree. They proceeded in this case, however, not merely from certain parallel flexures of the tubes, but especially from similar calcareous cells, which had accumulated in one zone for the greatest part of the length of the tooth. Tab. xxii. Fig. 3." See also his explanation of the zones in the Elephant's tooth, at pp. 510-11.—Trs.]

projections of 0.002–0.012 of a line, and more, which are pierced by dentinal canals, and have precisely the same aspect as the dentine, of which they are obviously nothing but portions; whilst in the latter, such *dentinal globules*, as I will term them, are not always distinct. This is especially true of the smallest spaces, which, on account of their notched form, and their communications with dentinal canals, might be taken for osseous *lacunæ*, and indeed have been so regarded; yet, at least in the crown, it is almost always easy to recognize their identity with the larger spaces. Greater difficulty is met with upon the fang, where small interglobular spaces and globules form a zone (the *granular layer* of Tomes), which often appears like a layer of small osseous lacunæ or of simple granules. I have but rarely observed actual *lacunæ* in normal dentine; they were, when present, invariably situated at the boundary of the cement (Fig. 185); on the other hand, interglobular spaces and dentinal globules are to be met with in the interior of the dentine of the root, and with especial distinctness on the walls of the pulp cavity, in which latter locality the globules often give rise to irregularities visible to the naked eye, or even to a botryoidal appearance. The interglobular spaces whose presence is normal in developing teeth, contain during life, not fluid, as might at first sight be expected, but a soft substance resembling tooth cartilage and possessing a canaliculated structure, like the dentine itself. It is remarkable that this substance offers a greater resistance to long maceration in hydrochloric acid than the matrix of the actually ossified tooth, and therefore, like the dentinal canals, it may be completely isolated. In sections, this *interglobular substance* usually dries up in such a manner that a cavity is produced, into which air penetrates; it is properly only in reference to these, that interglobular spaces can be spoken of. Many teeth, indeed, exhibit no interglobular substance, but they occasionally present the outlines of dentinal globules, in the form of delicate arched lines.

Dentine containing Haversian canals, the so-called "*vaso-dentine*" of Owen, which exists in many animals, is rarely found in man, and I am only acquainted with one case, observed by Tomes (l. c. p. 225), in which the vascular canals were numerous; on the other hand, in the dentine with irregular tubuli, which is formed in obliteration of the pulp cavity, we occasionally meet with scat-

tered Haversian canals and rounded cavities, like osseous lacunæ, constituting the so-called *osteo-dentine* of Owen.*

[TO BE CONTINUED.]

*[Considerable discrepancies will be met with if we compare the various statements of authors who have described the ultimate structure of the dentine.

1 According to Retzius, the dentine contains *cells*, but these cells, in his view, are *cavities* analogous to bone *lacunæ*, in which the dentinal canals terminate.

2. Mr. Nasmyth took a totally different view from this. The matrix, or, as he calls it, "interfibrous substance of the dentine," is, he says, composed entirely of cells; but these cells are solid bodies, lie between, and form the boundaries of the canals. His "cells" and those of Retzius had exactly as much, or as little relation to one another, as the "osteal cells" of Tomes and De Morgan (to which we have referred in the note to § 107, p. 335), have to osseous lacunæ.

3. Professor Owen likewise affirms that the dentine is made up of "cells"—his "dentinal cells,"—which, however, can hardly be identical with Czermak's "dentine globules," as stated in the text. We find it, in fact, somewhat difficult to understand what these "dentinal cells" are, inasmuch as we are unable to reconcile the various definitions of their nature which may be found in the "Odontography." In the first place, at p. 462, it is stated, in a note, that "the true dentinal or calcigerous cells include many tubes and intertubular spaces, and it is much more exact to say that, those cells contain a tubular structure, than that the interstitial space is cellular." In perfect accordance with this, we find, on referring to plate 123, fig. 1, which represents a section of human dentine, that the "dentinal cells" which are marked *d'd'*, are traversed by from seven to eleven dentinal tubules.

But at p. 463, the passage in which reference is made to this figure, runs thus. "the dentinal cells of the human tooth are subcircular, about $\frac{1}{3000}$ th of an inch in diameter. They seem most numerous from being most conspicuous near the periphery of the dentine, as originally described by me in the dentine of the Crocodile."

And in the Introduction, p. xlv. we find: "The diameter of the dentinal or calcified primary cells of the pulp, is usually one-fourth or one-half larger than that of the blood-discs manifest in them."

Now, how is it possible that a body $\frac{1}{3000}$ th of an inch in diameter, can have passing through it seven tubules, each of which is $\frac{1}{10000}$ th of an inch in diameter. To say nothing of the circumstance, that these tubules are at the very least $\frac{1}{10000}$ th of an inch apart. Halve the actual diameters of the tubules and arrange them close together, and they will barely squeeze into $\frac{1}{3000}$ th of an inch. We conclude, therefore, as the definitions and the figures of these dentinal cells are at variance, that we are not justified in making any definite statement about them.

4. Mr. Tomes asserts in his lectures, that the "intertubular tissue is itself made up of minute granules closely united," which pass into those of his "granular layer;" an opinion which seems to us to be most nearly in accordance with fact. We may observe, that the dentine globules and interglobular spaces of Czermak, had been previously very carefully figured and described by Mr. Tomes, in his lectures, p. 45.

5. The views of Czermak are stated in the text. Mr. James A. Salter (On certain Appearances occurring in the Dentine, dependent on its mode of Calcification," "Quarterly Journ. of Mic. Science," vol. I., p. 252, 1853), has confirmed Czermak's results, and has added some very interesting observations of his own. He considers

PREPARATION OF CAVITIES FOR FILLING TEETH.

BY A. S. TALBERT, D. D. S., LEXINGTON, KY.

Delivered before the Mississippi Valley Association of Dental Surgeons, February 23, 1855.

[CONTINUED FROM PAGE 119.]

But having thus cut away the caries with the hatchet and hoe, we have found the cavity not of a suitable shape to retain the filling. We are now ready for the drill. It is simply a worn out excavator, which having served out its time in *cutting* among the "dry bones," and been laid aside as useless, is now to have its neck broken off, and having been deprived of its *temper*, it is to be somewhat reversed in shape; its point being left a very little larger, which is to be filed from both ways, meeting in the centre, forming a straight edge. When hardened as hard as fire and water will make it, then polished, it is ready for use.

With these exceedingly hard and sharp drills you have only to make a few rotations, at any point or points in the cavity that may best suit your convenience, or that the condition of the decay may demand; care being taken to hold a steady hand, especially in the larger ones, which, however, need not be larger than an ordinary knitting needle, or one sixteenth part of an inch in diameter, while the smaller ones may be one-fourth as large or even less.

The operator unaccustomed to the use of this instrument, will be astonished at the rapidity with which he is now able to pre-

that the contour lines, which he prefers to call "contour markings," may arise from various causes, not only from those pointed out by Czermak—curvings and local enlargements of the canals and interglobular spaces, but also from a difference in density without alteration of structure; and he states as a general law, that the curves of the contour markings are in proportion to the primary curves of the dental tubes at any particular spot, and cross them at right angles. No markings are more divergent than the outline of the tooth, and passing from within outward, they abut in succession upon the external surface of the dentine, under the enamel and *crusta petrosa*, in the form of granular patches. The outer extremities of these patches look like white rings on the surface of the tooth. They are composed of coarse globular dentine, and gradually thin out internally into mere streaks. When a tooth is macerated in acid, it may be broken up into cones (triangles in section), as Dr. Sharpey first indicated, formed by the normal dentine between the contour markings. In transverse sections, the cones become, of course, rings. Finally, Mr. Salter points out that the enamel is almost always imperfect opposite the "patches" at the outer ends of the contour lines.—Trs.]

pare points in the cavity which shall serve as fastenings to his plug. He is also better enabled to make choice where these points shall be cut, selecting them remote from the pulp, and at such places as it would be impracticable to use an ordinary excavator.

Having finished the internal walls of the cavity with these three instruments, the hatchet, the hoe, and hard drill, it is completed with the burr by a few rotations of this instrument on the enamel, forming the edges of the cavity.

It will be remembered, we have been operating on a front tooth after the use of the file. It is asked, how will you make a straight instrument enter the cavity, so as to fulfill the indications required? It is answered. Suit your instrument to the width of space obtained by the file, taking advantage of the angle found, by placing the drill obliquely across the space, and making your points in the upper and lower, the outer and inner, walls of the cavity.

We can coincide heartily with our author in his remarks concerning "crooked, right and left," and bent excavators generally; all these serpentine affairs are great time losers. He would however, find it to his advantage to have some of his "hatchets" made with the edges bending to the right and some to the left, and some of his "hoes" with the edge upon the posterior portion of the point or end for *hoeing*, and upon the anterior portion for cutting in a direction from the operator, or, as we suppose he would call it, spading; an edge of this character particularly for a "hoe" will last longer and cut quite as fast, sometimes faster than a more delicate edge. Heavy instruments of this character are often of great service in cutting away the over-lapping shelves of enamel so frequently noticed in cases where extensive decay has resulted from the decomposition of foreign substances that have been retained in the fissures.

If I may be allowed to digress a moment, I will simply enter protest against all separations produced by india rubber, gutta percha, wooden wedges, cotton, or anything else, for granting that teeth may be thus separated *without injury* to either themselves or surrounding parts, the plug itself cannot be *finished* without the file.

The advantages often gained by the use of wedges of various kinds are too great to be set aside by a mere protest, even when backed by the argument "that the plug cannot be finished without the file." The only

valid objection against their use is, that the teeth are in many cases liable to return to their former position, and as the same results are apt to follow the same cause we are liable to have decay again. Where there is a probability of this, and the teeth are not so crowded as to overlap they should be wedged apart, and the lingual or posterior approximal edges so filed as to prevent the renewal of the original cause of trouble, viz: the approximation of two wide flat surfaces.

Having thus finished all the front cavities, we are prepared to commence the posterior surface of the cuspidati. The same instruments are required in addition to a thick straight wedge shaped file, by the free use of which you will obtain three important points, space, the removal of all softened bone, and clean smooth finish to your work.

As we advance toward the dens sapientiæ, the file requires to be so bent upon itself as to protect the angle of the mouth, but no other new instrument is required in the front approximal surfaces, nor is the hard drill dropped till we have the posterior surface of the first molar, when in its stead our hatchets are to be bent more at right angles. The *burr* is not to be forgotten in finishing the mouth, if I so speak of all these cavities, when it is practicable to reach them with it.

In filling the inferior teeth, no new instrument is required, hence, no description further is necessary, for the first class of cavities.

We come then to the consideration of the second class, to wit: such as are accessible without the use of the file. These are found in the grinding surfaces of the molars and bicuspidis in the labial and lingual surfaces, or in such approximal surfaces as have been exposed by the extraction of the adjacent teeth.

In the preparation of these, we are to supplant the file with heavy cutting instruments of various shapes, chiefly the hatchet and chisel; with which every thin and softened fragment of enamel is cut away, following every ramification to its farthest extent. Having cut away the caries with the excavator, the operator is ready for the hard drill, with which to make a suitable shape to the cavity, a few turns of it, only being necessary to penetrate healthy dentine, or even enamel, as is often required in following the ramifications of incipient decay in the grinding surfaces of the molars, and bicuspidis. On the other hand, if these surfaces

be badly decayed, they are to be cut in like proportion, even to the removal of one half the crown of the tooth either transversely or otherwise as the case may be.

But we have been treating such cavities as require no medication,—teeth, the nerves of which are not exposed in the preparation of their cavities.

Returning again to the superior central incisors, we have found the pulp exposed, but in a healthy condition. It is to be cut off and extracted by the use of softened steel, silver or gold instruments, which are to be rapidly inserted into the nerve cavity to the apex of the root, when with a quick turn it is withdrawn, bringing along with it the pulp of the tooth. After washing it well with warm water, to which is added a little pure brandy or spirits of camphor, and thoroughly drying, it is ready for filling. Should our patient refuse to submit to this *surgical* treatment, we are to destroy the vitality by medication. Care is to be taken not to push the treatment too far; it only being necessary to *paralyze* the nerve, and not destroy it with medicine. There is perhaps no better preparation with which to promote this object, than a paste of the consistence of common putty, made by rubbing well together in a mortar, three parts by weight of arsenious acid and one of acetate or sulphate of morphia, with sufficient kreosote to make the paste. This may be always kept on hand in a close stopped phial. Its plasticity enables the operator to place it directly on the pulp if properly exposed; while its solubility prevents it producing more than momentary pain by its mechanical pressure.

Being well stopped in by a little cotton or common bees-wax, the patient is less annoyed by its unpleasant taste, than if used in the form of consistent fluid, as is sometimes recommended, the operator having more time to stop it well before the fluids of the mouth have diffused it over its surface. A globule the size of a homœopathic pill, is sufficient to produce the desired result.

After allowing it to remain from a few minutes to as many hours, without much regard to time, the paralyzed nerve and vessels are cut away as before described, the blood running freely, with however little or no pain. Complete the operation as before, and it will be successful in ninety-nine cases in a hundred, depending upon the diagnosis between filling and extracting, together with

the treatment. Of the remaining teeth in which the nerves are to be destroyed previous to filling; it is hardly necessary to speak, since their treatment is to be conducted in the same way, varying a little to suit their position; becoming more difficult, with their increased number of fangs.

For the sake of preserving the natural appearance of the crowns and front surfaces of the incisors, they may be cut chiefly on the labial surface, after the free use of the flat file. Should the nerve cavity still be inaccessible, the operation may be facilitated by drilling through the enamel of the lingual face directly opposite the inferior apex of the pulp, thus forming an opening continuous with the nerve cavity directly through the tooth, by which the root may be easily washed with the syringe, and the whole thoroughly filled. The advocates of Risodontropy will join me in testimony to the use of the hard drills in this operation; though, I suppose the profession and community would have been quite as well served if they had never been used for any other purpose, than that of preparing cavities for filling, instead of boring good-for-nothing holes in teeth to be left unstopped, a nucleus for filth and disease. But, it is not the province of this paper to discuss the utility of Risodontropy.

We have one more class of cavities to treat, and I have already passed the limits of brevity which I prescribed in my commencement; I allude to those cavities in which the nerves had been destroyed previously by inflammation or otherwise. They require a more careful diagnosis, a more patient and longer treatment preparatory to filling them. We are to look well to our patient's diathesis, and if it be scrofulous, rheumatic, or otherwise prone to disease, we shall decide in favor of the extraction of the tooth; but if the general health be good and the whole mouth be made healthy by the entire removal of fangs and irrestorable teeth, the operator will proceed to remove every part of the remains of the pulp, washing well with warm water to which has been added an equal part of chloride of soda, a little kreosote, or chloroform.

Should, however, the disease have extended further, involving the apex of the root and its membranes, the treatment must be continued successively from day to day, until the effusion of purulent matter ceases to exhibit the least symptom of disease within, and the external appearance of the gum shows a healthy action.

When these indications are fulfilled, it may yet be well to insert a temporary filling of any substance that will perfectly exclude the air and moisture, and stop up any exhalations evolved by the action of disease that may chance to continue at the apex of the fang.

After this temporary filling has been worn forty-eight hours without pain or inconvenience it may be removed, and the operation completed, with a confidence that will justify the effort even though it prove occasionally unsuccessful.

Thus I have endeavored to notice all the preliminaries, as well as the necessary manipulations preparatory to inserting fillings in teeth! More might have been said,—less might have been told with better effect.

Mine is not the pen of a ready writer, nor did I suppose till within a few days, that I should find it in my power to fill my appointment. I regret that what I have done is not more worthy the confidence of those who conferred the duty upon me. Wherein my pen has failed, I shall be happy to demonstrate on the living subject, or answer any question you may suggest. In conclusion, I thank you for your kind attention.

EDITORIAL.

CORRESPONDENTS, SUBSCRIBERS, EXCHANGES, &c., are requested to direct all Communications relative to the financial or business departments of this Journal to "SUTTON & RAYNOR, 609 Broadway, N.Y.;" and articles for publication, books for review, exchanges, reports of society meetings, and all correspondence belonging to the editorial department, to "EDITOR OF DENTAL RECORDER, 139 Fourth Avenue, N. Y."

We close in this number, the series of articles upon the use of Crystal Gold. The new preparation is indeed a valuable aid to those who devote their time to saving teeth. It does not answer in all cases. It is, *of itself*, useless. *I* can do nothing, but, *with it*, much can be done. Operators, who may experiment with it, must not expect to do *every thing* at the first trial. It takes a long time to become skillful in the use of foil—how many are there who never become so? Why then, should it be taken for granted that Crystal Gold can be used successfully at a minute's notice?

Our readers will find the conclusion of Dr. Talbert's Address before the Mississippi Valley Association. We cannot endorse the whole of its matter. Of its manner,

we can say more; it is plain, blunt, manly, and modest; there is a happy absence of sinuosity about it that is pleasing. He evidently thinks and means what he says, and if he has "not the pen of a ready writer," we hope he will soon get such a pen, for very few could wield it more usefully.

In the May number of the Recorder we commenced a series of extracts from "Kolliker's Microscopic Anatomy." We continue the same in the present number, furnishing our subscribers with the illustrations for the same. The separate leaf of cuts is intended to be bound with the extract in the April number. When it is borne in mind that these are but a few of some hundred wood cuts illustrative of the minute anatomy of the human body—the importance and value of the work will be at once appreciated. The price of the book (\$5.00), is within the reach of all, and all should have it.

We find in the Forcep for May, a few pages of "second quality Billingsgate" levelled at us, and signed by the author of the article on Salivary Calculus, which we had occasion to notice in the February number of the Recorder. The best proof a man can give of want of argument and lack of ability, is the exhibition of ill temper or personal vituperation. We had no intention of misrepresenting that gentleman, nor of doing him injustice; nor did we do so. We have re-read carefully his article on Salivary Calculus, and feel satisfied that any sane man would have pronounced its author to have been more usefully employed while "*catching soft crabs for sick hens*," (see Forcep, Jan. 1855, art. on Salivary Calculus, page 7), than while attempting to pen a sensible article upon a scientific subject for the edification of an intelligent profession.

We also find in the Forcep a notice of the Recorder done in the "long may she wave style," which is (most appropriately) written by a "splenetic Gaul." We congratulate the Forcep upon its new acquisition in the shape of a *Foreign Correspondent*. We presume the next one will be from Flanders, where "our army swore so dreadfully." We also congratulate it upon its improved typographical appearance, much of which is doubtless due to our just criticism of last February, and for which we have received such thanks as lead us to fear that *joint stock companies*, like Republics, are ungrateful!!

We are also unfortunate enough to be the subject of notice in the May number of Ambler's "Dental Monitor," which publication still continues to be quite creditable to the—printer.

In comparing the remarks contained in it that speak of us personally with the articles alluded to in the Forcep, we must accord the palm to the Monitor, both as regards the *evident* self-respect of the author, and the amount of argument and literary ability displayed. We cheerfully mention this, for we give "Honor to whom honor is due"—and to those of our readers who *will not* read the Monitor, we would state that the main point of the article in question, is the falsehood insinuated in the following:

"If the profession prefer Ambler's Journal of Dental operations to Ballard's Dental Record, whose fault is that? If the profession and the public prefer the Monitor

to the Recorder, we hope our brother will not be discouraged, but that he will renew his efforts, *improve* his Record, and make the Recorder a readable Journal."

No such book as "Ballard's Dental Record" being in existence, nor has any such book *ever* been before the profession.

The editor seems to feel the importance of impressing upon his readers a conviction of the fact that our "dental education" was received *since the flood*. Human nature might, perhaps, realize a temporary gratification by making a retort upon a like subject and when we have good reasons for supposing that the gentleman has received *any* Dental education, we will mention the fact with such suggestions as may seem proper. The editor thanks us for our previous notice of him and his, "for, (he says), it has done us much good." We are truly glad of this, and (need we assure him?) he is fully welcome. We love to do good where it is appreciated, and by way of continuing the work, commend to his careful perusal and study, the following extract from the Code of Ethics lately adopted and promulgated by the Pennsylvania Association of Dental Surgeons. We noticed in the Monitor some portion of "the code," but by some unaccountable oversight, (on the part of the *printer*, we presume), this particular extract was omitted:

Sec. 2.—It is considered derogatory to the dignity of the profession to resort to public announcements, or private cards or handbills, inviting the attention of the public to particular methods of treatment; publicly to offer gratuitous advice, or to promise radical or extraordinary cures; or to publish cases and operations in the public newspapers, or suffer such publications to be made; to adduce certificates of skill and success, or to boast of cures and remedies. These are the ordinary practices of empirics, and are highly reprehensible in a regular dentist.

A circular, of special interest to Dentists, is inserted on the first page of the advertising sheet. It relates to a new manufacture of single teeth, combining all the improvements of shape, shades, and strength, at present in possession of teeth manufacturers, and now offered to the Profession for their adoption. Read it.

UNITED STATES CIRCUIT COURT—DENTAL PATENT CASE—ALLEN *vs.* HUNTER—NO INFRINGEMENT.—This important case, involving a patent for one of the most valuable improvements known in the dental art, "a new mode of setting artificial teeth on metallic plates, secured by John Allen, of Cincinnati, in December, 1851, which Dr. Wm. M. Hunter, also of our city, was alleged to have infringed, came to a conclusion on Saturday evening, after a long and able closing argument by Henry Stanbery, Esq., for the plaintiff, and charge of Judge McLean. The jury was out less than half an hour, and at 5 P. M. returned with a verdict of *Not Guilty*. Mr. Stanbery gave notice of a motion for a new trial. The testimony in the case was from men of the highest character in the Dental and Chemical Profession of our own city, and from various cities in the United States and Europe. Fifty-seven depositions were read, and thirty-one persons examined before the jury; There were ten of the depositions, and five of the witnesses for the plaintiff in opening the case; eighteen of the depositions, and nineteen of the witnesses were for the defence. The plaintiff, as rebutting evidence, read twenty-nine depositions and examined seven witnesses. This mode of setting teeth is one of the most important improvements in the dental art ever made, and we feel proud that the perfection of so great a desideratum as a continuous gum fused on a plate, so as to imitate nature itself, and be serviceable in practical use, has been accomplished by United States Artists, and by men of skill in our own city. Dr. Allen and Dr. Hunter have been experimenting for a long time for this object, and whether the palm is awarded to either, honor, great honor, is due to each.—*Cin. Gaz. May 21.*

New-York Dental Recorder ;

DEVOTED TO THE THEORY AND PRACTICE OF

(Surgical, Medical and Mechanical Dentistry.)

Vol. IX.]

JULY, 1855.

[No. 7.

KÖLLIKER'S MICROSCOPICAL ANATOMY.

[One vol. 8vo. Published by Lippincott, Grambo & Co., Phila.]

SPECIAL HISTOLOGY. OF THE TEETH.

[CONTINUED FROM PAGE 134.]

§139. The *Enamel, substantia vitrea*, forms a continuous layer investing the crown of the tooth ; it is thickest upon the masticating surface, and gradually diminishes towards the roots until at last it terminates by a sharply-defined or sometimes slightly-notched border, ceasing sooner upon the contiguous surfaces of the crowns, than upon their inner and outer sides. The external surface of the enamel appears smooth, but is always marked by delicate, close, transverse ridges; among which more marked circular elevations may occur.* A delicate membrane, discovered by Nasmyth, and which I will denominate the *cuticle of the enamel*, [*Nasmyth's membrane*, TRS.),† entirely covers,

* [Czermak (l. c. pp. 4, 5) states that the fine regular annular ridges and furrows upon the surface of the enamel, characterize the permanent teeth, and are not present upon the enamel of the milk set. The ridges are closest at the margin of the crown, and most distant towards its centre, where they finally disappear. In the space of a line, there were, at the margin of the enamel, 84-72 ridges; more internally, 36-30; and where they began to be indistinct only 18-12.—TRS.]

† [We have ventured to substitute the name "Nasmyth's membrane," for that of the "cuticle of the enamel," used by Professor Kolliker, inasmuch as the latter term gives a false idea of the relations of this important structure, which is much more than a mere "cuticle of the enamel," and is in fact, as one of us has already shown (Huxley, On the Development of the Teeth, "Quarterly Journal of Mic. Science," vol. I. p. 149, 1853), the *calcified membrana performativa* of the whole pulp.

This structure was first described, in its true relation to the dental tissues, by Mr.

but is so closely united with the enamel, that it can be demonstrated only by the use of hydrochloric acid. According to Berzelius and Retzius,* a similar membrane exists between the internal usually irregular surface of the enamel, and the dentine, but I have been unable to find it. The enamel is bluish, transparent in thin sections and much more brittle and harder than the other dental structures, so that it is hardly touched by the knife, and yields sparks with steel (Nasmyth). Chemically, it may be regarded as osseous substance, containing the smallest possible proportion of organic matter; but whether the latter belong to the class of collagenous substances or not is uncertain. According to Von Bibra, the enamel contains:—

	From a Molar of a Woman 25 years of age.	From a Molar of an adult Man.
Phosphate of lime, with some fluor- ide of calcium, - - -	81.63	89.82
Carbonate of lime, - - -	8.88	4.37
Phosphate of Magnesia, - - -	2.55	1.34
Salts, - - - - -	0.97	0.88
Cartilage, - - - - -	5.97	3.39
Fat, - - - - -	a trace	0.20
	<hr/> 100.00	<hr/> 100.00
Organic matters, - - - -	5.97	3.59
Inorganic matters, - - -	94.03	96.51

* [Berzelius and Retzius obviously saw Nasmyth's membrane (Retzius, in Mull. Archiv, 1837, pp. 53, 54). The latter says, that on macerating a large piece of enamel from the fossil tooth of a horse (dug out of a peat-moss) in dilute acid, he found after the enamel was dissolved, a membrane swimming in the fluid, "I examined it immediately under a considerable magnifying power; it appeared to be pierced by a multitude of closely arranged little holes, but exhibited no trace of fibres." But he states expressly, that this membrane was "internal to the enamel fibres, as Berzelius clearly points out," and therefore failed to recognize its true relations with the enamel.—Trs.]

Nasmyth, in a memoir read before the Medical and Chirurgical Society, in January, 1839, and which, illustrated with very good figures, was published in the twenty-second volume of the Society's Transactions (p. 310-328). Mr. Nasmyth states, that his attention had been drawn to fragments of a membrane which he found floating in the acid in which teeth had been macerated; "after a minute and careful examination, however, I was able to demonstrate with the greatest certainty, that they were derived from the external surface of the enamel, and that they were continuous with the structure covering the fang, which latter is itself continued into the chamber of the tooth. I afterwards succeeded in tracing this covering on the whole surface of the enamel and fang of the tooth in one continuous envelop; and eventually, I was enabled to remove it from the crown of the tooth in the form of a dis-

The enamel, as its fibrous structure indicates, consists entirely of the so-called *prisms or fibres of the enamel* (Fig. 189); long, solid prisms of 0.0015–0.0022 of a line in breadth, irregular in shape, but commonly hexagonal or pentagonal, which usually occupy the whole thickness of the enamel, resting with one extremity upon the dentine, and with the other upon Nasmyth's membrane. In adult teeth, these elements may be very readily detected in transverse and longitudinal sections, but can hardly be isolated for any great length; it is otherwise in young or developing teeth, where the enamel is much softer and may be cut with a knife. In such isolated prisms, whose broken ends may by accident appear pointed, whence they have been called "enamel needles," the surfaces and edges may be very well seen. We may also very frequently

Fig. 189.

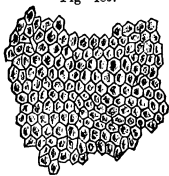


FIG. 189.—Surface of the enamel, with the ends of the enamel prisms, magnified 350 diameters. From the Calf.

tinged coat or capsule; this covering, which I proved to exist externally to the enamel, I have termed 'the persistent dental capsule,' p. 312.

"In all cases where this covering has been removed by means of acid, it has, of course, the appearance of a simple membrane, in consequence of the earthy deposits having been dissolved, and of there being only present the animal tissue. The structure and appearance of the covering detached in this manner from the enamel, are the same in every respect as those observed in the capsule of the unextruded tooth; consisting, like it, of two layers, fibrous externally, and having on its internal surface the peculiar reticulated appearance common to both, and shown at Plate V. Fig. 6," p. 313.

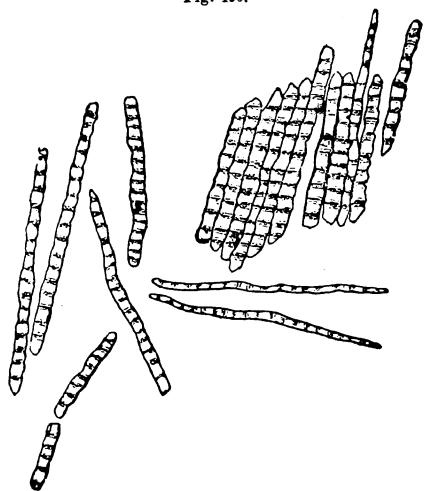
"On examining carefully fine sections of several teeth under the microscope, I perceived here also, that the structure in question was continuous with the *crusta petrosa* of the fang of the tooth," p. 313.

Mr. Nasmyth does not distinguish quite clearly in the text, between the proper capsular membrane on the fang and *crusta petrosa* itself, though his figures (Pl. 5, Figs. 4, 5) exhibit the two structures as sufficiently distinct, and he hesitates, at p. 316, to decide what relation the outer layer of pale yellowish or brown substance in the cement of the teeth of the Elk, Ox, Bradypus, &c., may have to the "persistent capsule."

We have not retained Mr. Nasmyth's own term for his discovery, because, as one of us has endeavored to show (Huxley, l. c.) while he accurately described its *relations* to the other dental tissues, he mistook its true nature. (See Appendix, § 8, on the Development of the Teeth). But, on the other hand, as no one has, before or since, distinctly described his "persistent capsule," we have thought it desirable that his name should be associated with the structure.—TBS.]

observe upon them, particularly after the addition of dilute hydrochloric acid, more or less distinct transverse striæ 0.0014–0.002 of a line apart, which arise from slight varicosities, and give the fibres a certain resemblance to muscular bundles, or rather colossal muscular fibrils. They certainly do

Fig. 190.



not indicate a cellular composition. If the action of the hydrochloric acid be allowed to go on, the fibres soon become quite pale, the transverse striation disappears, and nothing remains but a delicate framework corresponding with the previously solid fibres, and which often presents certain appearances of tubes. In the end this also becomes almost completely destroyed by the ac-

tion of the acid, so that in teeth which have been thus macerated hardly anything remains of the enamel, which does not, like the dentine, retain its form.

The prisms of the enamel are *united* very intricately without any intermediate substance. I have not been able to convince myself that canals constantly exist between the prisms,* but it is certain that cavities of various kinds may be not unfrequently found in the enamel. Such, for instance, are—1. The continuations of the dentinal canals into the enamel, to which reference has been made above, with the elongated cavities at the border of the dentine which arise from their expansion (Fig. 191, c); and 2. The cleft-like gaps in the middle and external portions of the enamel (Fig. 191), which are not in communication with the

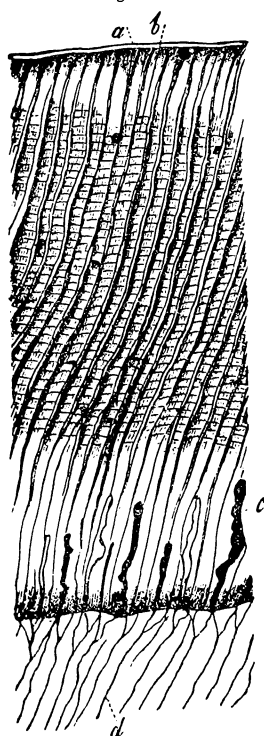
FIG. 190.—Enamel prisms isolated, after the slight action of hydrochloric acid; magnified 350 diameters. From Man.

* [With respect to this point, opinions differ; Todd and Bowman consider that canals normally exist between the enamel prisms. Tomes finds canals in the enamel prisms of young animals, and sometimes in a part or the whole length of them in old teeth. Kolliker (Mikr. Anat. 77) has not yet observed any such cases. Czermak (l. c. p. 13) believes that, in a few cases, he has observed "very numerous delicate enamel tubules arranged in close series."—Trs.]

preceding, are never entirely absent in any enamel, and often occur in very great numbers, as narrower or wider spaces which, however, never contain air.

The general *course* of the prisms of the enamel resembles that of the dentinal canals of the crown of the tooth, but extensive flexures are only to be met with towards the masticating surface.

Fig. 191.



Most of the prisms extend through the whole thickness of the enamel, but this is not the case with all. They also decussate in a peculiar manner; thus, in some transverse sections, we observe annular layers of prisms, 0.08–0.12 of a line thick, extending from the dentine to the surface of the enamel, and corresponding with fine circular lines upon its exterior; in each layer, all the prisms take a similar direction, which is different from that of the prisms of the contiguous layers, so that perpendicular sections of such enamel, especially when moistened with hydrochloric acid, have a very singular striated appearance, arising from the dark transverse and clear longitudinal sections of the prisms being alternately presented to the eye.

A similar decussation of the prisms occurs constantly at the masticating surface, and here the layers of enamel take a generally annular arrangement, so that they describe circles, in the molars, and ellipses in the incisor teeth; however, towards the centre of the masticating surface, irregularities occur which we are not yet in a condition to explain. Care must be taken not to confound the colorless *striæ* which indicate these peculiar arrangements of the enamel fibres, with certain *brownish lines* or *colored streaks* which cross the prisms in various directions, and in perpendicular sections appear like oblique ascending lines or arches (Fig. 187); in transverse sections, like circles in the external lay-

FIG. 191.—Dentine and enamel, magnified 350 diameters; Man: *a*, cuticle of the enamel (Nasmyth's membrane); *b*, enamel prisms with transverse markings and interposed clefts; *c*, larger cavities in the enamel; *d*, dentine.

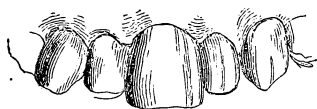
ers of enamel, rarely extending through its whole thickness. These I regard as the expression of the lamellated development of the enamel.

Nasmyth's membrane is a calcified, structureless membrane, 0.0004–0.0008 of a line thick, distinguished by the great resistance it offers to chemical reagents, and its consequent appropriateness as a defence for the crown of the tooth. It is not altered by maceration in water, and is not dissolved by boiling in water, concentrated acetic acid, hydrochloric acid, sulphuric acid, and nitric acid; the latter only renders it yellow. In caustic alkalies it remains unchanged. Boiled with caustic potassa and soda, it becomes white and somewhat disintegrated, but still forms a connected mass; the potassa is rendered slightly turbid by the addition of hydrochloric acid, but clears with an excess. The membrane burns with an ammoniacal odor, and yields a calcerous spongy coal.

[TO BE CONTINUED.]

EDITOR N. Y. RECORDER :

Dear Sir :—I herewith transmit you a mould taken from the mouth of Master Henry H——, aged sixteen, a patient of mine.



I thought it remarkable, from the great size of the front incisor, as also from the history of the case as related by his mother. On remarking this peculiar tooth, she asked if I did not remember extracting the root of a tooth for him some 4 or 5 years since. I recollected that I had done so; she then stated to me that the boy, one day playing on the ice, ran with great force against another lad who had a large stone in his hand; his mouth striking against it fractured the incisor next to this one. The root, from the exposure of the nerve, became so painful that she brought him to me and I extracted it. She then added, that the two teeth (front incisors,) were exactly of the same appearance and size, and that since that period, this remaining tooth has kept increasing until it has reached its present width, completely filling up the space

between the lateral incisors. This she is willing to substantiate by affidavit if necessary.

These are the facts of the case as they have come to my knowledge. If it is true that this tooth has increased as stated by his mother, and I have no doubt it is her firm belief (as I know her to be a lady of education and good sense,) that it has done so, it establishes a very extraordinary fact in physiology, and one that has hitherto been believed to be impossible, as I have never heard or read of a similar instance. Nature, however, sometimes makes wonderful efforts to supply deficiencies in the human system; in this case she may have even turned Dentist, and in this way supplied the place of the missing tooth.

I submit the case to you as it may, perhaps, induce among members of our profession enquiry and observation, and may possibly bring forward other cases analogous to this.

I remain respectfully yours, &c.,

WILLIAM ARNOLD.

4 Clinton Place, N Y.

DENTAL HEMORRHAGE.

BY A. A. BLANDY, D.D.S., M.D., OF BALTIMORE, MD.

Having read in a recent number of your valuable Journal (for March 22d) an article headed "*A new cure for obstinate bleeding following the extraction of a tooth*," by Dr. Samuel A. Cartwright, and having treated many cases successfully by the means the author prescribes, I feel confident of the error in making a general application of his method of treatment as laid down in this article; I beg the privilege of briefly reviewing the same; and of offering means by which the most obstinate cases of *dental hemorrhage* can be certainly suppressed.

In 49 cases out of 50 the bleeding is caused by the rupture of vessels which enter the apices of the fangs of a tooth; or it may occur from the rupture of many minute periosteal vessels which under peculiar circumstances may invest a tooth in its socket, these vessels not possessing sufficient power of contraction, when lacera-

ted, to prevent the blood from being ejected; or, the condition of the blood being such as to prevent the usual coagulation; or it may take place from the injury of large capillary vessels sometimes found in the gum surrounding the alveoli. We are not aware of the existence of vessels within the substance of the alveoli sufficiently large to cause dangerous hemorrhage, and therefore cannot enumerate such as a source of this trouble, as the writer under consideration seems to infer.

But the means by which such events are brought about in the rupture of any particular vessel, can scarcely be regarded as important, the great object being to act upon the lacerated part, which from some constitutional cause is in a too weakened condition to endure a suppression of the hemorrhage. The gentleman states that the "Frenchman could not understand why lateral pressure on the outside of the cheek should have any effect in arresting the hemorrhage," and that "he failed to make him see the rationale of the process." Now we are like the Frenchman, we cannot see the philosophy of this lateral pressure, nor can we see the analogy between this means of arresting dental hemorrhage and that grand process which nature adopts in uterine hemorrhage, by bringing all her powers to bear in forcibly contracting the uterus in all its parts at the same time, in other words, of contracting all its fibres around the bleeding orifices; whilst the pressure of the tourniquet can only affect the external side of the alveolus, and that through a soft pad upon a soft lip and gum, which if made to press against the bleeding vessels, may suppress the hemorrhage: and yet we cannot but conceive it might be made more direct and convenient, admitting that there may be found cases of bleeding arising from external superficial vessels.

Granting that the gentleman is correct in his position as regards the "expanded parieties of the alveolar walls," how does the application of the tourniquet upon the outer surface affect the inner? or does he mean to infer that mere external pressure is sufficient to produce compression upon the inner wall? How does the pressure apply itself to the injured aperture when supported anteriorly and posteriorly by firm and unyielding bone and teeth? How will this pressure affect the vessels oozing out a strong flow of blood from the lowest depths of the socket, where the

alveolus does not extend to, but which is a part of the maxilla proper? How could it affect the vessels of the gum found on the interior walls of the alveolus?

If we may be allowed, we would charge the writer with misinterpreting the authorities he consulted, or of having applied to bad ones; for the treatment of dental hemorrhage as laid down by modern authors is philosophical and abundantly established by the great experience of the many, so that it is no longer regarded, in the hands of scientific men, as a case of much danger or magnitude. We do not think he has given the plan that is most generally adopted by the dental profession, viz: to make compression upon the whole surface of the socket and gum on either side, by using a metal cap which extends down as far as possible on both sides; this cap is lined with cotton wool saturated with tannic acid or some powerful astringent or caustic, as the case may be; the cavity is well filled with the saturated cotton, and the cap placed on and held firmly in this position by means of the mouth being closed and bandaged, and so held for the necessary length of time.

Another successful plan, is the forming of cones, made from angular-shaped pieces of linen, coated with wax, and rolled up into the proper size and shape to suit the cavity. A slight coating of cotton is made to adhere by first warming the wax. This cotton is then saturated, as before mentioned, and the pointed cone forced down upon the bleeding vessels through the socket. We admit that cases sometimes present themselves of great difficulty to make these mechanical applications, but they are exceedingly rare, and would, beyond doubt, absolutely exclude the rude fixture of the tourniquet, such cases generally demanding a purely medical treatment.

In all cases of dental hemorrhage occurring through a peculiar hemorrhagic diathesis, when obstinate or unyielding to ordinary mechanical treatment, the most active stimulants should be administered, particularly when a lethargic and inactive condition of the circulation is present; and sedatives and anodynes when a too great excitation is found.

We have seen several cases where the hemorrhage has been almost instantly checked from the drinking of a glass of wine, or the administering of sixty or eighty drops of laudanum, even

when the greatest apprehension had been entertained from the immense loss of blood, and the impossibility of making pressure upon the ruptured vessels, they having most probably retracted into the substance of the maxilla. It is very evident that if the bone enclosing the vessel be uninjured, no degree of pressure can affect it; and that this is often the case, there can be no doubt. The injury existing in the lower point of the socket, nothing but a perpendicular pressure, which at the same time presses against the walls of the socket, can exert any influence; for without force against the surrounding walls, the blood would flow without restraint at the points against which this pressure was not made, the vessel itself not being compressed, and the stoppage depending upon an entire lateral pressure, as it were, corking up the socket into which the blood is flowing. The best application that can be made in such cases, is the conical wax rolls, which if they do not absolutely compress and stop the bleeding orifice, will certainly choke or cork the cavity of the socket, and will suppress the greatest number of cases of hemorrhage where mechanical pressure is alone sufficient. But when the bleeding is dependent upon the rupture of many periosteal vessels, and there exists this tendency before spoken of, we are of opinion that pressure alone is not to be relied upon, but that the treatment must be addressed to constitutional impressions of immediate effect, and that a strong and active power must be had over the general circulation.

Hemorrhages, occurring in whatever part of the system they may, depend in a great measure upon effects produced by excitements and influences exerted over the whole circulating system, which are exhibited by such incidental ruptures as the one under consideration, and are not the natural result alone of the rupture of a vessel in the extraction of a tooth, in epistaxis, or even in flooding; for under ordinary circumstances of health, these ruptures might all take place without any danger of fatal hemorrhage or of any protracted bleeding. The occurrence of such a circumstance should not be held as a serious indication of constitutional vices, morbid influences arising from injurious habits or tendencies, acting upon and producing a diseased condition of the blood, and dental hemorrhage must in the majority of cases be looked upon as an entirely *special* accident from the rupture produced, superadded to some preceding tendency residing in one or more of the conditions just referred to.

We therefore do not regard the mere mechanical suppression as reliable in entirely subduing the evil, but would ever address ourselves at once to the constitutional changes which have acted as the proximate cause. No dental hemorrhage will prove troublesome that is not superinduced by an abnormal condition of the blood, or that of the circulating vessels; and we regret to see so little attention paid to a fact so self-evident. For when we consider the minute size of these vessels, the wonder alone remains, that even exhaustion should take place through so small an orifice, particularly so when we remember that many much larger vessels are severed in surgical operations of any magnitude, without important consequences. We have never examined into the condition of a patient previous to the hemorrhage, without finding that this accident had been preceded for several days by an occasional sense of uneasiness, restlessness, weight, fullness, flushes, accompanied with chills and slight fever, and we believe that these are constantly found preceding any other hemorrhagic development.—*Boston Medical and Surgical Journal*.

From the London Medical Times and Gazette.

ON THE CURE OF TOOTHACHE, AND A METHOD OF TREATING EXPOSED NERVE.

BY DONALDSON MACKENZIE, ESQ., SURGEON-DENTIST.

The painful affection called toothache is so well known, that any description would be superfluous. It may, however, not be out of place to distinguish toothache as that pain experienced when the ganglion of vessels contained in the *cavitas pulpæ* of the tooth is inflamed; and that all other affections arising from the teeth are entirely distinct from this, and require a very different treatment. It would be most convenient were they distinguished by different terms, as — toothache (a) and socket-ache, a species of terminology, although not correctly anatomical, yet sufficiently significant for general use.

True toothache is, therefore, the expression of inflammation acting upon the pulp and lining membrane of the centre of the tooth, and is always produced upon caries approaching that

(a) Periostosis, or inflammation of dental periosteum, and alveolus in a future paper.

cavity; and, as inflammation of other tissue is reducible by medical interference, it would seem absurd to suppose that the same action upon so minute a structure as the dental pulp, should defy our skill. However, I hope that, with few exceptions, this notion has gone to the tomb of all the Capulets. I am individually of opinion that the guillotine is as legitimate an instrument for the cure of headache as the forceps for the relief of toothache. When caries has extended to that point at which inflammation of the pulp begins, the presumption is, that this action is set up by atmospheric pressure, or the permeation of irritants through the tubulous structure of the bone to the pulp cavity. This circumstance is sufficient of itself to direct us in curative proceedings; for, if an irritating fluid can find a passage, what is to stop the progress of menstria combined with principles of an opposite character?

The symptoms expressed by inflammation acting upon any part of our body, which is obvious to our senses, are pain, heat, redness, and swelling; but in the dentinal pulp, as in other internal organs, the increase of heat is not observable, and the acute pain may be the result of this tissue, by swelling, being forced against the unyielding walls of its bony chamber; for we find, upon the pulp being allowed to enlarge, from the destruction of a portion of that chamber, that the pain is very much lessened or entirely removed.

In inflammatory affections of the body, the Medical practitioner in his remedial treatment has recourse to bleeding, purging, blistering, heat, cold, etc., according to the structure of the part affected; but our unfortunate teeth are not often so rationally dealt with, as may be gathered from the fact of some of our first men recommending muriatic acid, or argento-nitrate, as a cure for inflammation (by their own account) in one of the most highly organized structures of the human body. One would be almost led to conceive the pulp to be a fungus to be destroyed, instead of a membrane to be preserved vital with all the skill we possess.

Toothache is dependent on the same causes as general phlegmasia, and may be reduced by the usual treatment of lowering the circulation, but the seat of the disease being confined to so small a spot, it is much more under control, and it will generally yield to local applications of a soothing nature.

All preparations of camphor, opium, morphia, etc., will reduce

the violence of toothache; but success is not always to be relied upon from the use of any one of these singly, frequent applications are sometimes necessary, and also a combination of two or more of them. The *modus operandi* is simply to saturate a suitable piece of lint, and insert it into the cavity; often one application is sufficient, sometimes a dozen are necessary, but perseverance will ultimately command success.

When a patient presents himself suffering from pain in his teeth, which he of course calls toothache, it is the business of the dentist to examine and determine whether toothache is present, or inflammation of the periosteum; this he may do from an optical survey combined with the expressed symptoms of the patient.

Should the former only be present, the remedy is at hand; but it may be found that the sockets of one or more of the other teeth are affected, in which case should the pain be severe, (b) the forceps is generally our only resource, and the anodynes for those with inflamed pulp. When pain has ceased in them, the carious portion should be carefully and entirely cut away; the tooth may then, or in a few days subsequently, be stopped in the usual way with gold or amalgam, as the operator may deem most fitting, for the choice of material cannot be left to the patient, as a cavity may be quite suitable to receive the soft stopping, but not able to bear the pressure necessary to solidify gold, from the circumstance of there not being sufficient thickness of unsoftened ivory left to serve as a ceiling to the pulp cavity, or floor of the stopping.

In my paper published in this Journal (October 28th) I observed that caries is generally found to exist between the front teeth when closely crowded together, and where that does exist, both teeth are in most cases more or less affected; so without making a considerable opening with a file, the difficulty of stopping either is apparent; it is not possible to devise any specific mode in absence of an individual case, so that the skill and judgment of the operator are particularly called into play.

However, we are not frequently left in this dilemma, for it is rare to find two opposite cavities, each equally suitable for stopping. In most cases, before the dentist is called upon, the disease has destroyed one of the teeth sufficiently to enable the operator

(b) Sometimes local abstraction of blood, or the application of warm water and tincture of opium may give relief, but in most cases the pain returns.

to stop the other. When this is not the case it is then of course necessary to make an opening, and the features then displayed will determine the mode of treatment. We may suggest, for example, to file the most decayed in the manner described in a former paper, and thus derive space enough to successfully stop the other.

I need hardly add that the care required to perform this operation always corresponds with the difficulty of its performance. It is needless to discuss the value of the different stoppings here, as for the front teeth there can be no choice. Gold is the only substance that will not communicate a dark shade, or to speak more emphatically, turn the tooth black. This obligation to use gold in such awkward positions calls for an instrument better adapted to intricate work than those usually made use of. When in any such difficulty I generally construct an instrument to suit the case in hand, and the marginal drawing will show an instrument I use for the purpose of stopping with gold cavities situated on the sides betwixt the front teeth, and sometimes the bicuspidati.*

By this drawing it will be seen that the instrument is similar to a pair of forceps having movable bills, one of which is formed to rest against the sound side of the tooth, while the other is the stopping-tool to force in the gold. The advantage it possesses over those in use is, that the force (required to consolidate and fix securely the gold in the cavity) is exerted between the mandibles of the instrument. In the ordinary way the force is exerted against the side of the tooth, frequently causing considerable inflammation of the socket, and probable loss of vitality to the tooth itself.

Improvements might be made in this instrument; for instance, if two were made, a right and a left, only one of the bills might be movable, viz: the stopping point, for various sized cavities, etc.

The instrument from which the drawing was made, cannot be without imperfections, as it was formed upon the spur of the moment to suit a case, from a pair of damaged excising forceps.

The basis of all soft stoppings (of any use) is quicksilver combined with any metal that will concrete after amalgamation. Gold and platina, which are the only metals that do not oxidize,

* The instrument, as illustrated by the drawing, is identical with J. D. Chevalier's plugging forceps.—ED. REC.

do not concrete after amalgamation ; but most other metals do, and in whatever form, become discolored when acted upon by the fluids of the mouth ; it is therefore obvious that no metal except gold can be used as a stopping for the front teeth, platina being deficient in pliability ; indeed, none of the amalgams now in use should be employed to stop front teeth, and yet I have been at different times called upon to remove them from the teeth of young persons on account of discoloration. Although I object to the use of soft stoppings for front teeth, and although they were much written against twenty years ago, yet experience teaches us to hail them as a great auxiliary when judiciously applied.

There need not be a question that pure gold, either sponge or leaf, is the true and legitimate succedaneum for decayed cavities, yet many cases are presented to us where an attempt to introduce gold would be attended with great uneasiness to the patient, and probably the subsequent loss of the tooth. For example : in cases where the caries has left the ivory so thin over the cavitas pulpæ, that any attempt to press gold into the carious cavity would cause severe pain by forcing up the roof of the chamber upon the pulp. In cases of this nature it is evident that recourse must be had to a stopping that may be introduced in a plastic state to become subsequently concrete.

A curative process is set up by nature in teeth that have been stopped with the silver amalgam, which, therefore, recommends itself as the most suitable for extreme cases ; the only objection that it admits of is its aptitude to discolor the tooth. The "white stoppings" are less objectionable in that respect, but, as they have not been so long in use, their curative virtues have not been so well ascertained.

When the disease has proceeded a stage further, the consequence is, that in cutting away the softened bone, we may expose some portion of the pulp, which at once precludes the possibility of stopping the tooth by any of the ordinary methods.

Mr. Koecker devised a method of cauterizing the exposed pulp, and protecting it by means of a leaden floor. Mr. Snell improved upon the cauterizing instrument, but both plans seem to have fallen short of anticipation, and a sufficient cauterization could not be effected ; probably from a combination of unavoidable circumstances—the first, the impossibility of raising the iron to a

white heat at a lamp or candle ; the second, the impossibility of placing the instrument upon the part, before it had parted with a large portion of the low degree of redness it had acquired ; the third, the many attempts required from the terror of the patient causing him to withdraw his head in the fear of having his mouth burnt.

It is obviously of consequence to secure the services of any tooth, and some extra trouble taken with a tooth in this state is often satisfactorily bestowed.

That this mode of treating exposed nerve has failed in general success is evident from the circumstance of its disuse by the Profession ; but if those gentlemen, Messrs. Koecker and Snell, have succeeded in one case, with the inadequate means then at their disposal, what may we not hope for now, with our resources ? I quite agree with Mr. Bell and other writers of eminence, that, could the cauterizing wire be got to the part at a sufficiently high temperature, the operation would be successful. To produce this desirable effect, we have the voltaic pile, and for those who would practise this mode, let them procure a piece of fine platina wire, twist the centre of it into a small flat coil, leaving the two ends free to be attached to the poles of the battery ; place in the cells an active solution of acid ; have the cavity well freed from moisture ; place the platina coil in immediate proximity to the spot intended to be cauterized ; let an assistant lower the plates into the trough ; when the platina coil is excited to a white heat, touch the protruding pulp steadily, and the desired result will be attained (c).

Having found, in the early years of my practice, the method then followed for reducing the pulp both tedious and uncertain, I abandoned it for a surer plan. The interior of the cavity is examined with a magnifying reflector, to keep in view the protruding pulp, then carefully remove as much of the decayed matter as possible without wounding the pulp. The acetate of morphia is now applied, and a suitable plug of cotton wool or scraped lint saturated in dissolved mastic, introduced over the powder to prevent its being taken up by the saliva. This must be renewed at intervals for two or three days ; about that time the pulp will

(c) A French instrument for cauterizing is described in the *Lancet*—No. for March 28th, 1835

have receded, and left the cavity in a fit state to receive the stopping. But although the nerve is not present in the carious cavity, it would be imprudent to attempt to stop the tooth in the usual way, nor would gold be at all admissible, even with a lead floor. Nor are we bound to adopt that plan, having more manageable materials at hand in the amalgams; but also with these, the opening through which the pulp protruded, must be protected from the action of the stopping; and the system I adopt is to select a pellet of shot, which after flattening to the necessary thickness, then, with the stopping burnisher, I form it into a little cup. This cup is to be placed with its hollow over the pulp, similar to a dome. At first I found considerable difficulty in carrying this into execution. To place it on the exact spot was difficult, and, when there, to retain it *in situ*. After trying different sorts of tongs without succeeding to my wish, I hit upon a plan so simple that the wonder was that I should ever have thought of any other. With the assistance of one of our stopping instruments,—a rectangle for the lower, an obtuse one for the other,—the point of which I touch with Canada balsam, and apply it to the round top of the leaden cup, then carefully place it *in situ* over the opening at the bottom of the carious cavity, and hold it there. I then introduce the soft stopping, which I take care to press in gently, and carefully withdraw the instrument with which I have been holding the leaden cup, it being now securely fixed in its place. It may be as well to remark that the oxide should not be taken off the lead, as it prevents the quicksilver from amalgamating with it; and I am not certain that it has not some salutary influence upon the pulp. Mr. Koecker surmises that the acetate is formed while in the tooth. I doubt this, but it may be that the minute portion of arsenic that is introduced in the manufacture of shot may have some sedative influence upon the vessels in the tooth. It is necessary to observe that no pus is being formed in the cavity, which may be ascertained by a careful examination of the cotton when removed, as the stopping would not be successful even with the hollow cup, which would soon become filled, and cause great disturbance to the pulp.

A question will naturally arise, and with it a hope that the pulp thus protected would at once emulate the snail, and set about re-

pairing its house, but I have never ascertained that this desirable result takes place, not having had an opportunity of examining any tooth afterwards that had been so treated; but although I can only surmise, as regards the ossific deposit, I have personal experience of the success of the operation. The anterior molar of my upper jaw was thus treated seven or eight years back, and has since continued perfectly free from uneasiness, and as useful in mastication as any sound tooth.

When the whole roof of the *cavitas pulpæ* has been removed by caries, the pulp frequently becomes tumid, filling nearly the whole carious hollow of the tooth; and although teeth in this state are entirely useless, yet, from the circumstance of their freedom from pain, and the usual dislike to extraction, we are often called upon to make some arrangement to prevent the food intruding into the cavity. The plan I have recommended could not be adopted in this case; so recourse must be had to get a gold cap, nicely fitted to spring upon the neck of the tooth, so to retain it firmly there during mastication. Caps are, no doubt, certain destruction to any tooth they may be applied to, unless removed and cleansed three or four times a day, to clear them of the acrid matter of which they generally are the depository. This acts upon the enamel of the tooth, and before long it is found entirely wasted away; but in the case now before us, this destructive agency would sometimes be hailed as a benefit, by ridding the mouth of a useless incumbrance, without pain to the patient.

21A, Saville-row, Regent-st.

EXTRACTS FROM THE RECORDS OF THE BOSTON SOCIETY FOR MEDICAL OBSERVATION.

BY S. L. SPRAGUE, M.D., SECRETARY.

Dr. Cabot exhibited to the Society pathological specimens from a young man 17 years of age, who had necrosis of a portion of the superior maxilla. Two months ago, the patient had the right lateral, and both central incisors of the upper jaw filled, and into the former, some preparation was introduced for the purpose of killing the nerve. One month since, he first had pain and soreness in and about the lateral incisor, which very soon extended

forward to the median line, and backward as far as the place from which the first molar had been removed, six months previously. The cheek swelled so much that it was impossible to open the right eye. At the same time, some swelling appeared about the palatal and alveolar processes of the right superior maxilla, and has continued to increase gradually to the present time.

Three weeks ago, an abscess pointed just above the lateral incisor; it was opened, and discharged a considerable quantity of offensive pus. Even then, all the teeth of the right half of the upper jaw, excepting the second molar, had become loose; the lateral incisor so much so, that it was easily removed with the fingers.

From this date, (April 29) the pain has not been acute, but dull and heavy. The abscess then opened, has since filled twice, and discharged itself spontaneously. During the first week there was considerable fever. No dead bone has ever been thrown off.

May 19th.—The patient now presents himself with right cheek rather larger than the left. There is much swelling of the gum, extending along the roof of the mouth to the median line, and limited posteriorly by the second molar, which is perfectly firm. The part feels soft, and is movable; the probe detects naked bone, and motion gives an indistinct crepitus, and there is fluctuation where an abscess before pointed. Patient was etherized, and an incision was made along the edge of the alveolus, the knife being carried vertically. Four teeth were then extracted, and several irregular fragments of bone (one as large as a walnut) were removed. There was but little hemorrhage.

21st.—Patient has been very comfortable, and has not felt the slightest inconvenience from the operation.

Dr. Cabot also mentioned the case of a child, 12 years old, who had had one of the middle incisor teeth filled with an arsenical preparation for the destruction of the nerve. In a few hours the patient had great pain in the tooth, the face was swollen, and all the teeth became loose, so that they could be moved. Six weeks afterwards he came to Dr. Keep, who advised that they should be removed, which was done. There was an opening in the cheek through which several pieces of bone came away, and this continued six weeks before all the pieces were removed. Dr. K. has had several cases where teeth were filled with arsenic in which such results followed, and in the case of Dr. Cabot, Dr. K. thought they arose from the same cause.

Dr. Cabot thought it merely destroyed the vitality of the tooth, which then acting like a foreign body, produced ulceration of the alveolus and necrosis. The attachments around soft parts were perfectly healthy in both Dr. C. and Dr. K.'s cases.

Dr. Slade asked whether exposure to the fumes of phosphorus might not have been a cause of the disease. He had seen a case somewhat similar in a girl 18 years of age, who came to him for advice. An incisor of the upper jaw had been extracted. The cheek became swollen, and a small portion of bone followed the exit of the tooth. A molar next became loose, and was extracted, and thus the teeth continued to become loose, and were extracted one after another for two years. Now she has lost all the teeth up to the middle incisors. There was a constant discharge of pus, and a probe passed into the cavity of the antrum. The girl had worked in a factory where friction matches were made, and he attributed the disease to phosphorus. In this case, also, the gums were perfectly healthy.

Dr. Cabot said there was no chance of poisoning by phosphorus in the cases he reported. One of the patients was a school girl, and the other a young man in a comfortable condition of life, not obliged to work for a living. Poisoning by phosphorus was slow, and required time.

Dr. Williams spoke of the practice of some dentists and surgeons, of trephining the alveola and removing the decayed bone.

Dr. Ellis inquired if it was a common practice to make use of arsenic for preserving teeth.

Dr. Cabot replied that it was not employed now by respectable dentists in this country. Teeth filled with arsenic, he was informed by Dr. Keep, all turned to a mahogany color.

NITRATE OF SILVER, ethereal solution of.—Dissolve 8 grains of the Nitrate of Silver, to one ounce of nitric ether. The ether acts as a solvent of any sebaceous secretion which may be upon the skin, and from its volatility, very quickly dries, producing at the same time a sensation of coolness very agreeable to the patient. Several coatings may be applied successively to the same part with little loss of time.—*Ward, Med. Times and Gazette.*

EDITORIAL.

CORRESPONDENTS, SUBSCRIBERS, EXCHANGES, &c., are requested to direct all Communications relative to the financial or business departments of this Journal, to "SUTTON & RAYNOR, 609 Broadway, N.Y.;" and articles for publication, books for review, exchanges, reports of society meetings, and all correspondence belonging to the editorial department, to "EDITOR OF DENTAL RECORDER, 139 Fourth Avenue, N. Y."

The extracts made from the transactions of the Boston Society for Medical Observation, will doubtless cause some surprise to our readers. We have never before heard of *filling* teeth with arsenic, for the purpose of destroying their nerves. We don't wonder that the teeth and a part of the maxilla *came away*; if the patient had only done so before allowing any such barbarous practice to be put into effect, he would have proved himself a wiser, and certainly would now be a *better* man. But what we do wonder at is—that *all the respectable portion of the profession should have so entirely discarded the use of arsenic in their practice*. Our belief in this matter is, that if there is any one article in the materia medica that is more generally used than any other by Dentists for treating nerves of teeth, that article is the aforesaid arsenic. To be sure, we never heard of its being used for filling teeth *out of Boston*, and then only in the instance above, but in amounts ranging from the 20th to the 60th of a grain, for destroying the pulp previous to its removal, we believe it to be as invaluable as its very general use by the profession would seem to indicate.

In one of the late numbers of the Recorder we alluded to a series of experiments being carried on by B. A. SATTERTHWAIT, of Lima, Ohio, having for their object, the manufacture of sets of teeth upon a porcelain base, and entirely dispensing with plate. Since then, we have received the following letter from Dr. S. The set of teeth alluded to, we shall be happy to show to any members of the Profession who may desire to see it.

LIMA, Allen Co., Ohio, May 16, 1855.

EDITOR DENTAL RECORDER,

Sir :

Enclosed, I send you a specimen of the kind of work I am now making. I received the May number of the Recorder last evening, and hasten to send you the piece I have on hand, which was made as an experiment some time ago, and is not, as you will see, entirely perfect. I believe this kind of work can be made stronger than single teeth mounted in the usual way; that is, the teeth are not so liable to break off, and it is not as heavy as a good gold job.

Yours, Respectfully,

B. A. SATTERTHWAIT.

We publish elsewhere, an interesting letter from Dr. WM. ARNOLD of this City. The case described is illustrated by a wood cut. We have not seen the patient, and cannot, from the plaster cast furnished us, judge how near the centre of the mouth the remaining incisor may be. The space made by the lost tooth seems to have been very advantageously filled up by its fellow, but the idea of its having grown or extended laterally since its eruption is not to be considered.

Our readers will also find a reply by Dr. A. A. BLANDY, to the article on alveolar hemorrhage by Dr. CARPENTER, re-published in the May number of the Recorder. We are thus enabled to show both sides of the question. It was intended to add some notes to the article of Dr. C., but want of space and leisure induced us to postpone all criticisms for the time being. We are now spared all trouble on that score, as there is nothing left to be said.

The following letter, addressed to the Executive Officers of the Baltimore, Philadelphia, and Cincinnati Dental Colleges, elicited the accompanying replies from the two last named institutions:

NEW YORK, May 13th, 1855.

Dear Sir:

Believing that the Profession would feel interested in knowing the names and residences of those persons upon whom the Honorary Degree of Doctor of Dental Surgery has been conferred, I take the liberty of addressing you upon the subject. The information is intended for publication in the New York Dental Recorder, and should it not be considered incompatible with the interests of your Institution, and it will not be taxing your time and patience too much to furnish it, you will, by complying with the above, do an act of simple justice to many, abash some few pretenders, and very much oblige more than your obedient servant,

CHAS. W. BALLARD.

Addressed to } Drs. R. ARTHUR, Phila.,
J. TAYLOR, Cin.,
P. H. AUSTEN, Balt.

PHILADELPHIA, June 1st, 1855.

DR. CHARLES W. BALLARD,

Dear Sir:

I have received your communication of the 13th inst., requesting me to furnish you, for publication in the "Dental Recorder," with a list of the "names and residences of those persons upon whom the Honorary Degree of Doctor of Dental Surgery has been conferred," by the Philadelphia Dental College. Your request is readily complied with, and you will find appended the list you desire.

It may be proper to explain that the Honorary Degree conferred by the Philadelphia College, does not give the right to engage in the practice of our Profession, but is simply intended as a testimonial to the individual, upon whom it is conferred, of the appreciation of the Faculty of the value of services rendered the Dental Profession, or for distinguished merit, either as a practitioner or author.

Two forms of Diplomas are issued from the Philadelphia College; as they are innovations, in several respects, upon the common practice, and as they are necessary to a full explanation of the matter so far as this College is concerned, I send copies, which you will find below.*

*PHILADELPHIA COLLEGE OF DENTAL SURGERY. *To all to whom these Presents may come.*—GREETING: Be it known, that A—— B—— has completed the course of study required by this Institution, and, after an examination by us, has been found qualified to enter upon the practice of Dental Surgery.

"In consideration of which, by virtue of the power vested in us, by a Charter

A number of Honorary Degrees were conferred at the first commencement of our College, upon established practitioners in the City of Philadelphia and vicinity, for the reasons which have been stated; but our rule in this matter has since been, and will continue to be, to confer these Degrees for the reasons only, stated above.

Respectfully yours,

R. ARTHUR, *Dean*.

List of the Names and Residences of persons upon whom Honorary Degrees have been conferred by the Philadelphia College of Dental Surgery.

SESSION 1852-3.

William Bradley, M. D., Phila., Pa.,
S. Dillingham, "
J. F. B. Flagg, M. D., "
Stephen T. Beale, M. D., "
W. W. Fouché, "
Jacob Gilliams, M. D., "
James M. Harris, M. D., "
John H. McQuillen, M. D., "
S. L. Mintzer, "
Daniel Neall, Phila., Pa.
Frederick Reinstein, "
Edward Townsend, "
Charles Townsend, "
D. P. Whipple, "
C. C. Williams, "

Samuel Stockton White, Phila., Pa.,
Thomas W. Evans, Paris, France,
J. F. Flagg, M. D., Boston, Mass.,
James Fleming, M. D., Harrisburg, Pa.,
*O. R. Post, Brattleborough, Vermont.
Wm. R. Webster, Richmond, Indiana.

SESSION 1853-4.

John Tomes, London, England,
J. G. Kœhler, M. D., Schuylkillhaven, Pa.,
Paul Beck Goddard, M. D., Phila., Pa.,
C. A. Harris, M. D., D. D. S., Balt., Md.,
F. M. Dixon, Philadelphia, Pa.,
Charles Moore, Pottstown, Pa.,
J. R. McCurdy, Philadelphia, Pa.

SESSION 1854-5.

Hudson S. Burr, M. D., Phila, Pa.

* Since deceased.

CINCINNATI, Ohio, May 30th, 1855.

DR. CHAS. W. BALLARD,

Dear Sir :

Your first note, requesting the names of the Graduates of the Ohio College of Dental Surgery for publication with those of the other Dental Colleges in the next number of the Recorder, led me to suppose it was a list of all who had received Diplomas from our School, and not simply those who had received Honorary Degrees. Your note of the 20th, however, corrects this, and as I am just making out the list for our Annual Announcement, I send you that portion you desire. The Ohio College of Dental Surgery make it a rule every few years to publish a list of all its graduates. We do this as an act of justice to those who receive the honors of the Institution, for there are many "claiming to be of us," who have not even passed in at one door and out at the other. In looking over the list I send you, I find four or five who were regular Students at our College, but who could not be present at the examination, and although their degrees are honorary, they might with propriety appear on the other list.

In our College the Examining Committee pass upon all applications for graduation and by recent rule, Honorary Degrees will be conferred on only those who have en-

from the State of Pennsylvania, we confer upon him the Degree of Doctor of Dental Surgery, with all the rights and privileges thereunto pertaining.

"Witness our hands and the common seal of the College, this, — — —."

(Date, and Signatures.)

PHILADELPHIA COLLEGE OF DENTAL SURGERY. HONORARY DIPLOMA. *To all to whom these Presents may come.*—GREETING: Be it known that we acknowledge the valuable services rendered by A— B—, in the cause of Dental Education, and, therefore, by the authority vested in us by a Charter from the State of Pennsylvania, we confer upon him the Honorary Degree of Doctor of Dental Surgery."

The above is a copy of an Honorary Diploma with the principal blank filled. Any other statement may be substituted for the wording, "The valuable services, &c.," which is merely written upon the document.

tered the Profession previous to the establishment of the College, and even then they must be sustained by professional acquirement and good character. Hoping to see a list of the kind you speak of, in the next number of the Recorder, I subscribe myself truly yours, &c.,

JAS. TAYLOR.

List of those who have received Honorary Degrees from the Ohio College of Dental Surgery.

David P. Hunt, Indianapolis, Ind.
John Jones, Dayton, Ohio.
Samuel Griffith, Louisville, Ky.
W. H. Goddard, " "
Perrin Knowlton, Cincinnati, Ohio.
Y. W. Lewis, Canton, Miss.
W. S. Chandler, New Orleans, La.
H. D. Stratton, Sacramento, Cal.
Saml. B. Fithian, St. Louis, Mo.
J. H. Andrews, Lexington, Mo.
Charles Bonsall, Cincinnati, Ohio.
C. F. Knowlton, Detroit, Mich.
J. P. Ubrey, Rising Sun, Ind.
Rufus Somerby, Louisville, Ky.
Moses DeCamp, Mansfield, Ohio.
J. W. Baxter, Warsaw, Ky.
J. A. Kenicott, Chicago, Ill.
P. G. C. Hunt, Indianapolis, Ind.
David K. Hitchcock, Boston, Mass.
J. C. Clark, New Orleans, La.

C. H. Quinlan, Chicago, Ill.
E. S. Holmes, Lockport, N. Y.
G. W. Keeley, Oxford, Ohio.
Daniel Dougherty, Bardstown, Ky.
C. W. Spalding, St. Louis, Mo.
W. S. Bache, Porto Rico.
H. E. Peebles, Lexington, Mo.
Wm. Bell, Elizaville, Ky.
B. T. Currier, Bath, Maine.
James S. Knapp, New Orleans, La.
James C. Ross, Nashville, Tenn.
John Harris, Salem, Ohio.
J. B. Newbrough, Cleaveland, Ohio.
Charles E. Kells, New Orleans, La.
G. J. Freidricks, " "
H. J. B. McKellops, St. Louis, Mo.
A. J. Reeve, Mount Vernon, Ohio.
J. D. Quinlan, Chicago, Ill.
T. S. Waring, Zanesville, Ohio.
G. B. Miner, Milwaukee, Wis.

GREAT DENTAL TRIAL OF ALLEN vs. HUNTER.

We would inform the Profession that we are about publishing a very correct and impartial report of this case, embracing all the important testimony, a full exposition of the law on patents, the able arguments of the Counsel, the charge of the Judge, and verdict of the Jury.

The Profession will thus get a complete history of this improvement—they will get the experience of the Profession in its use, and learn much of the best mode of working the material. A vast amount of scientific matter will be found in the report, and arranged in just that manner best suited to the wants of the Profession.

It will be published in an enlarged edition of the Dental Register of the West, and will be ready for distribution by the 10th or 20th of July. It will be for sale in New York at SUTTON & RAYNOR's, 609 Broadway.

Copies may also be obtained from J. D. Chevalier, and the New York Tooth Co., New York; B. S. Codman, Boston; Orum & Armstrong, Phila.; Jones, White and McCurdy's depots; F. Arnold, Baltimore; J. B. Dunlevy, Pittsburg; Dr. J. M. Brown, Cincinnati; T. L. Rives, St. Louis; J. T. Hughes, Louisville, Ky.; Hyde & Goodrich, New Orleans; or by addressing the Editor of the Dental Register, Cincinnati, Ohio. It will be sent to the regular paying subscribers of the Register, free of extra charge. The price of single copies will be seventy-five cents, or three copies for two dollars, and will be sent to any part of the United States, by mail, postage paid.

JAMES TAYLOR.

A GUIDE TO MOTHERS AND NURSES IN DIRECTING FIRST AND SECOND DENTITION, (by C. P. Culver.)

This is a neatly gotten up pamphlet of about sixty pages, and intended for popular reading and distribution. It is composed mostly of extracts and quotations from the writings of our standard authors upon the subject, and we give the author all credit for his laudable endeavor to instruct and educate the public in this particular.

New-York Dental Recorder;

DEVOTED TO THE THEORY AND PRACTICE OF

Surgical, Medical and Mechanical Dentistry.

Vol. IX.]

AUGUST, 1855.

[No. 8.

KÖLLIKER'S MICROSCOPICAL ANATOMY.

[One vol. 8vo. Published by Lippincott, Grambo & Co., Phila.]

SPECIAL HISTOLOGY. OF THE TEETH.

[CONTINUED FROM PAGE 148.]

§ 140. The *Cement, substantia ostoidea, cementum* (Fig. 185,) is a cortical layer of true osseous tissue, which covers the fangs, and in the many-fanged teeth, not uncommonly unites them all together. It commences where the enamel ceases, as a very thin layer, either simply abutting upon, or slightly overlapping it, increases in thickness lower down, and finally attains its *maximum* at the ends of the fangs, and on the alveolar surface of the molar teeth between the fangs. Its internal surface is, in man, very intimately united with the dentine, but without any connecting substance, so that frequently, at least under high powers, the limit of the two structures is not altogether sharply defined. The external surface is very closely surrounded by the periosteum of the alveolar cavity, but is not so firmly united with the gum; after the removal of these soft parts it is usually irregular, and is frequently marked with annular striations. The cement is the least hard of the three dental tissues, and is, chemically, almost identical with bone. Von Bibra found:—

	In Man.	In the Ox.
Organic matters,	29.42	32.24
Inorganic matters,	70.58	67.76
	—100.00	—100.00

The latter, thus composed:—

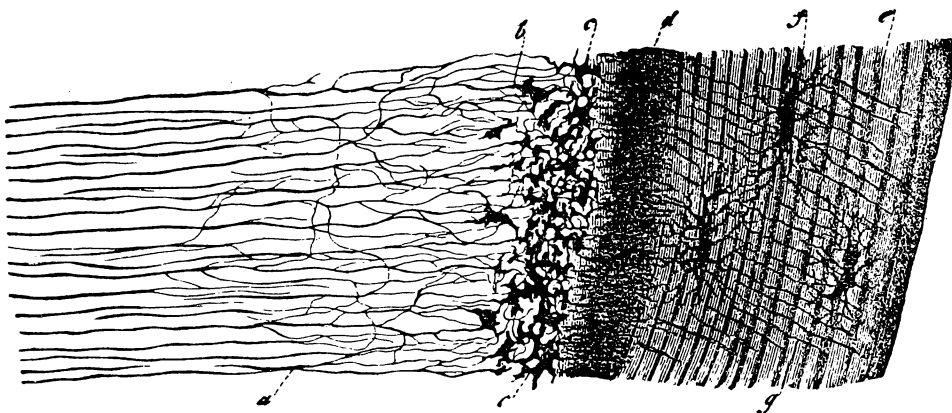
Phosphate of lime and fluoride of calcium,	58.73
Carbonate of lime,	7.22
Phosphate of magnesia,	0.99
Salts,	0.82
Cartilage,	31.31
Fat,	0.93
	—100.00

The earthy sats are readily extracted from the cement by acids, a white cartilage remaining, which may easily be separated from the dentine, and usually, when boiled, yields gelatin.

Like bone, the cement consists of *matrix* and of *lacunæ*, but rarely contains Haversian canals and vessels. Besides these, peculiar canals, analogous to those of the dentine, are found, and other more abnormal cavities.

The *matrix* is sometimes granular, sometimes transversely striated, sometimes amorphous, and frequently laminated like bone.

Fig. 192.

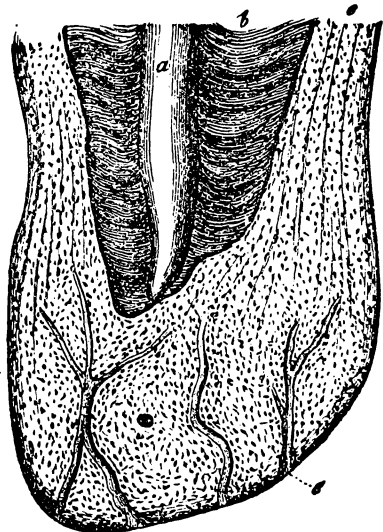


The *lacunæ* resemble, in all essential characters, those of the bones, so that any detailed description may be dispensed with. They are distinguished only by the great variety which they present in number, form, and size (0.005–0.02, even to 0.03 of a line), and the unusual number and length (as much as 0.03 of a line), of their *canaliculi*. The majority are oval, and lie parallel to the axis of the tooth, others are rounded and pyriform. Those are most remarkable which have a very elongated form, together with a narrow, canal-like cavity (Fig. 185), inasmuch as their resemblance to the dentinal canals is unmistakable. The *canaliculi* often resemble feathers and brushes, and unless the *lacunæ* are altogether isolated, connect them with one another, and anastomose with the ends of the dentinal canals. In the

FIG. 192.—Dentine and Cement from the middle of the fang of an incisor tooth : *a*, dentinal canals ; *b*, interglobular spaces, having the appearance of osseous *lacunæ* ; *c*, smaller interglobular spaces ; *d*, commencement of the cement, with many canals close together ; *e*, its *lamellæ* ; *f*, *lacunæ* ; *g*, canals ; from Man. Magnified 350 diameters.

thinnest part of the cement, towards the crown, the *lacunæ* are invariably absent; they are first met with, as a rule, about the middle of the fang, but are here scattered and solitary; towards the extremity their number gradually increases, and they not unfrequently take on a very regular arrangement, as in the external layer of the long bones, lying in series in the layers of the cement, and sending most of their canaliculi inwards and outwards, so as to give rise to an even, fine, transverse striation of the cement. The thick layers of cement which occur in old teeth, present immense quantities of lacunæ, but these are, to a great extent, irregular, and have mostly the elongated form. Many

Fig. 193.



lacunæ are bordered, singly or in groups, by a very distinct, clear, yellowish, slightly undulated margin, which partially or entirely surrounds them; it has, perhaps, some relation to the cells from which the cavities are developed.

Haversian canals do not occur in young teeth, where the cement has only its normal thickness; but they are very common in old teeth, especially molars, and in *hyperostoses* one, three, or more enter the cement from without, branch out two or three times, and then terminate in blind extremities. Their diameter is too small (0.005–0.01 of a line), to contain medulla as well as blood-vessels, and they are commonly like those of the bones, surrounded by a few connective *lamellæ*.

Besides these vacuities, the cement occasionally presents peculiar sinuous cavities, which are certainly pathological products (see "Mikr. Anat." II. 2, p. 82, Fig. 202); and frequently canals, like dentinal canals (Fig. 192), which are sometimes closely set, at others more isolated, occasionally ramified, and very frequently connected with the ends of the dentinal canals, and with the *canaliculi* of the osseous *lacunæ*.

FIG. 193.—Cement and Dentine of the root of an old tooth: *a*, pulp cavity; *b*, dentine; *c*, cement, with lacunæ; *e*, Haversian canals. From Man.

In the cement of the *Solipedia*, the osseous *lacunæ* with their *canaliculi*, of the innermost layers, are frequently enclosed within actual cells, as Gerber first pointed out. If such cement be macerated in hydrochloric acid these cells may be readily isolated, and present the following characters, which are not unimportant in their bearing upon the nature of the *lacunæ*. 1. The *lacunæ* frequently occur in twos and threes in a single cell, exactly as I have seen them in rickety bones. 2. The substance which immediately surrounds the cavities and their processes, is not so readily soluble in hydrochloric acid as the other parts of the thickened cell. In fact, while the cells appear generally pale, a dark notched body, which often contains a very distinct cavity, is very obvious in their interior; and as we see, by comparing it with these *lacunæ* of the cement, the contours of whose cells are no longer visible, is nothing else than the innermost portion of the thickened wall of the original cell. In the last-mentioned *lacunæ*, in fact it is easy to demonstrate, by the aid of acetic acid, a special wall, which is at first thick, but subsequently becomes thinner; and occasionally such *lacunæ*, with walls which give off a few processes externally, may be isolated. These *lacunæ* are frequently empty, but in other cases they contain a substance which, at first, also resists hydrochloric acid, wherein, however, I could discover no nucleus.*

§ 141. The *soft parts* of the teeth are: the *periosteum* of the *alveolus*, the *dental pulp*, and the *gum*. The *periosteum* of the *alveolus* is very intimately connected with the fangs of the tooth, and has the same structure as any other *periosteum*, except that it is softer, contains no elastic element, and possesses an abundant nervous network, containing many thick fibres.

The *dental pulp*—the remains of the foetal dental papilla—

* [The structure of the cement on the fang of the still uncut molar of the calf, is very peculiar and instructive. It is here a white, friable substance, about $\frac{1}{40}$ of an inch thick, bounded externally by a delicate Nasmyth's membrane. Its outer three-fourths are composed of straight parallel fibres, resembling those of the enamel, but $\frac{1}{60}$ of an inch long. The inner fourth consists of similar fibres, inextricably interlaced, cemented into a mass by a calcareous deposit, and containing, here and there, spaces or *lacunæ*, $\frac{1}{1600}$ of an inch in length, as it were left among the fibres. This structure appears to become obliterated with age, as the cement on the fang of the molar immediately in front of this, which had cut the gum, had the ordinary appearance. (Huxley, l. c.)—Trs.]

arises from the *periosteum* at the bottom of the *alveolus*, enters the fangs, and, as a continuous, soft, reddish, very vascular and nervous substance, fills their canals and the pulp cavity in such a manner as to be everywhere in close adherence to the inner surface of the dentine. The pulp consists of an indistinctly fibrous connective tissue, totally destitute of the elastic element, but containing many dispersed, round and elongated nuclei; and except that it occasionally contains narrow bundles, almost like imperfect foetal connective tissue. A fluid may be expressed from it which, like mucous, is coagulated by acetic acid, and is not dissolved in an excess; and, similarly, the entire pulp is rendered whitish by acetic acid, never becoming transparent like perfect connective tissue. This substance constitutes the principal mass of the pulp, so far as the vessels and nerves extend; but upon its surface we find, immediately beneath a delicate structureless membrane, a layer of 0.02–0.04 of a line thick, composed of many series of cells, 0.012 of a line long, 0.002–0.003 of a line broad, cylindrical or pointed at one end, with long narrow nucleolated nuclei of 0.005 of a line, arranged perpendicularly to the surface of the pulp like a cylinder epithelium. More internally these regular series are no longer recognizable, but the cells, without losing their close radial arrangement, are more intermixed, and pass, finally, by shorter and rounder cells, without any sharp lines of demarcation, into the vascular tissue of the pulp. These cells correspond with the formative cells of the dentine, to be described presently, and they afford the materials for the deposits of dentine upon the walls of the pulp cavity, which takes place even in the adult.

The *vessels* of the pulp are excessively numerous, whence its red color. 3–10 small arteries enter each pulp of a simple tooth, and ultimately form, as well in its interior as upon its surface, a loose plexus of capillaries, 0.004–0.006 of a line in diameter, which also exhibits, here and there, upon the surface distinct loops from which the veins arise. The pulp appears to contain no *lymphatics*, but its *nerves** are extremely abundant. Arising from the well-known *nervi dentales*, there passes into every fang a large trunk of 0.03–0.04, and besides, as many as six or more, fine

* [The nerves of the alveolar periosteum and of the pulp, are particularly described by Czermak (l. c. pp. 27, 28).—Tks.] •

branches of 0.01–0.02 of a line, which contain fibres of 0.0016–0.003 of a line. They ascend at first without any considerable anastomoses and only giving off a few filaments; but in the thicker part of the pulp they form a rich plexus, with elongated meshes and divisions of the nerve tubules, and so gradually break up into fine primitive fibres of 0.001–0.0016 of a line. I am inclined to think their final termination is in loops, but I grant that so long as the primitive fibrils in those loops which unquestionably do occur, have not been traced from trunk to trunk, which no one has yet done, the subject is open to doubt.

The *gum*, *gingiva*, that portion of the oral mucous membrane which unites the alveolar margins of the jaw and the necks of the teeth, is a pale red vascular tissue, which is tolerably soft, but feels firm on account of the subjacent hard parts: it attains, where it lies upon the teeth, a thickness of $\frac{1}{2}$ – $1\frac{1}{2}$ lines, and possesses papillæ of a considerable size (of 0.15–0.3 of a line; in old people they even reach 0.7 of a line in length, and, like the *papillæ filiformes*, are covered with secondary papillæ), and a pavement epithelium, which, between the papillæ, has a thickness of 0.23–0.4 of a line. I could find no *glands* upon the gum, but care must be taken not to confound with them certain rounded depressions of the epithelium of 0.8–0.15 of a line in diameter, with more cornified cells, which occur not unfrequently upon its upper portions.

[TO BE CONTINUED.]

REMOVAL OF THE DENTAL PULP AND FANG FILLING.

BY J. S. CLARK, D.D.S., NEW ORLEANS.

“The lower molar offers about the same shape and difficulty as the one last described, (the upper bicuspid,) only that it is double, and both fangs generally present a bifurcated pulp, the front fang being generally the best defined of the two. But the upper molar offers still greater difficulties than either. The lingual fang pulp is as simple and as easy extirpated as any in the mouth, but usually the two labial fangs present great difficulties, and sometimes defy entrance to the apex. Here the posterior

fang of the first molar and the anterior fang of the second molar are usually the best defined. In the removal of the pulp from both lower and upper molars, the first thing we attempt is the removal of that mass of pulp that fills the bifurcating foramen, and which connects with the two fangs of the lower or the three of the upper. In the upper molar (under consideration,) we attempt, after extirpating the pulp from the lingual fang, to cut so far down into the labial fangs, that with careful washing out and minute examination under a strong lens, we can plainly see the mouth of the separate canals into the fangs, and then with our finest broach attempt the operation, and even after half an hour's faithful attempt we acknowledge that we sometimes fail, and fill the lingual fang and only one or neither of the labial ones.

But in those cases they are very minute, and the cause of less apprehension than in larger developments. But it is an imperfection which we have always deplored. The dens sapientiæ are found in all shapes, from a clump of fangs all joined, to two, three and four fangs separate and distinct, and we leave them without further notice. The operation of extirpation and fang filling is one that no theory or description, however minute, can make so familiar to the reader as to enable him to perform it at once with dexterity. It requires practical demonstration, and it should be attempted with the full understanding that obstacles will be met with, which patience and careful perseverance alone will surmount. But when once surmounted they will form the practical solutions ever after in subsequent attempts. In regard to the diseases to be met with and their treatment, we will offer a few suggestions in the spirit of this whole article, viz: they are the best known to us, and are their treatment the means by which we have been the most successful. We will, however, first say, that we feel very little hesitation in a pretty full confidence in this operation, if performed before ulceration, or when we remove a "live pulp," and we do not think one case in five hundred, if perfectly performed, will cause even ulceration to any annoying extent.

The first and most prominent disease that we encounter is, present suppuration or previous destruction and ulceration of the pulp, leaving the canal filled with a decomposed fungoid remnant of the pulp. The previous ulceration is always regarded as an un-

fortunate prognosis, but that is met with in, say, half the cases attempted. Our first operation is to remove, as perfectly as possible, all remnants of the pulp when we commence the treatment with creosote, and in the first application a small amount of arsenic.

We take a broach (thoroughly annealed) and wind around it to the point, cotton fibre, and having moistened it with creosote, insert it to near the apex of the fang or fangs, and then cut it off just within the cavity of the tooth, and let it remain at least for one day. We then attempt to pass a very small broach, spring temper (drawn to a blue,) through the foramen into the sac beyond; if this cannot be done, we continue treatment with creosote, but if the opening is free and the external opening through the alveolus is also free, we open that too, and by winding the mouth of a powerful syringe with a small tube, fit the tube into the mouth of the fang tight, and force the contents through the fang into the sac, and also the external opening through the alveolar and gum.

This can be done with facility in most of the teeth of single fang. The contents of the syringe may be, according to judgment, stimulant, escharotic or astringent.

A solution of nitrate of silver is our favorite in stubborn, indolent ulcers. Creosote and water for a more mild application, or sulphate of zinc in solution in still more milder forms. In most cases we succeed in healing up these issues, when we proceed to fill as described.

Chloride of zinc we use with good effect in those dry or putrid cases of entire destruction of the pulp. By the way, the idea of employing chloride of zinc was given to us by Dr. Blake, Professor of Anatomy in the medical department of the St. Louis University, in 1847, and some years since, we mentioned in a note to Dr. James Taylor, of Cincinnati, the fact, and stated our desire that the profession should try it as an escharotic, as we were far from a thorough knowledge of its exact action, and found it very variable in its effects. We are now using it, as first proposed by Dr. Blake, to arrest decomposition, and our impression now is, that its effects are very unlike arsenic.

Arsenic acts with certainty when placed in contact with a living surface, being absorbed in such a manner as to affect the whole

pulp of a tooth, whereas chloride of zinc will not accomplish the death or paralizati^on of a healthy pulp, but has more affinity for the decomposing surface or substance. But to return to the subject under consideration. One other difficulty encountered in the diseased pulp is, the frequent presence of small granulations of internal cementum, or something similar to it. In cutting away the internal cementum immediately over the bifurcating mass of pulp in the tooth of compound fangs, there seems to be, in many cases, a sort of abnormal formation of cementum in the shape of detached granulations of various shapes and sizes. We have found them as large as a No. 4 shot, and as small as a grain of sand. We took five pieces from the enlarged part of the pulp cavity of a tooth in the mouth of one of our brother dentists, some years since, in this city, and one caused us much trouble by its having been carelessly pushed up into the fang. These things, if not common, are, at least, often met with, and the same dentist, Dr. James S. Knapp, (alluded to above,) has informed me that he has encountered them in at least a dozen cases within the last month, the last of which was to-day, which specimens are preserved. The perfect ossification of the entire pulp is sometimes met with, the best specimen of which we have ever seen was taken from an upper cuspidati-shaped supernumerary tooth, which we extracted from a Mr. Furber, of St. Louis, and which we enclosed to Dr. Solyman Brown, in 1840. This tooth we extracted in the presence of a physician, and wishing to examine the pulp, we cut off the crown with an excising forceps, and found no pulp but a perfectly ossified substance, exact in shape and conformation to the pulp cavity, and with a pair of tweezers we could remove it at will to the very point of the fang, it being about three-fourths of an inch long. A similar ossification was met with in 1845, in the lingual fang of an upper molar, and there is one fact in regard to both these cases that we wish to notice. Both of these teeth had been fractured by violence. The cuspidati by the forceps, in former attempts to extract it, had half of its crown broken off, and the molar had been broken in extracting its neighbor, the second molar, with too straight a forceps. The question might arise whether it was an extra effort of nature to shield the tooth on the approach of danger, as in the case of teeth worn down to near the pulp cavity, or whether it was a disease. We

leave others to examine this point, but will state that both of the gentlemen from whom these teeth were taken are since deceased from hereditarily acquired pulmonary disease.”—*Dental Obturator*.

HIGHLY INTERESTING TO DENTISTS.

Discovery of a new mode of producing anæsthesia, by ALEXANDER FLEMING, M. D., Professor of Materia Medica, Queens College, Cork, by compression of the carotids.

The mode of operating is “to place the thumb of each hand under the angle of the lower jaw and feeling the artery, to press backward and obstruct the circulation through it. The recumbent position is the best, and the head of the patient should lie a little forward, to relax the skin. There should be no pressure on the windpipe.” * * * * “There is felt a soft humming in the ears, a sense of tingling steals over the body, and in a few seconds complete unconsciousness and insensibility supervene, and continue as long as the pressure is maintained. On its removal there is confusion of thought, with a return of the tingling sensation, and in a few seconds consciousness is restored. The operation pales the face slightly, but the pulse is little if any at all affected. In profound sleep the breathing is stertorous, but otherwise free.

The experiments have never caused nausea, sickness, or any other unpleasant symptom, except in a few instances slight languor. The period of profound sleep in my experiments has seldom exceeded fifteen seconds, never half a minute.”

We have tried this as directed above, and have succeeded in producing entire somnolence at least, and have good reason to suppose anæsthesia, for we have performed several small but painful operations under its influence with the same indications of its being painless, as is shown under the inhalation of ether or chloroform. The Profession will doubtless soon test its value and give us results, and we refrain from further remarks, hoping in the next No. of the *Obturator* to have a collection of interesting facts to record.—*Dental Obturator*.

SEPARATION OF THE TEETH.

J. TAFT.

In most cases of approximal decay, the teeth must be separated before filling. Though cases are not unfrequent in which the space between them is sufficient to admit of free manipulation in the various steps of the operation.

This operation though so important, is very imperfectly performed by many who attempt to fill teeth, and on this account a great number of fillings are less perfect than they would otherwise be. It is a truism, that, in the operation of filling teeth, unless every step in the process is complete, the result will be imperfect. And of no part of the process is it more certainly true than of the separation of the teeth. Unless this first step is thoroughly performed, and space obtained for the introduction and free use of the various instruments required, not any part of the operation can be perfect. Imperfect separation of the teeth is a prominent cause of so many imperfect fillings in approximal cavities. Many imperfect fillings are made, even when ample separation is obtained; yet without it no one can make a good filling.

The objects for which the teeth are separated are various; the most frequent is, to obtain space sufficient in which to operate with facility, in all parts of the operation of filling. It is sometimes requisite to cut away more than would otherwise be necessary, to remove thin friable edges of the cavity, and to obtain sufficiently firm borders to sustain the filling.

Teeth are sometimes separated for the introduction of clasps: this should never be done if it can be avoided, as it usually proves highly injurious to the teeth. Many of our best operators do not separate teeth at all for this purpose: and this is doubtless the best course. At one time it was a very common practice. It was a general practice at one time to separate the teeth to relieve a crowded condition; this has been abandoned. There are three methods of separating the teeth—with the file, with the chisel or thick cutting instruments, and by pressure. Formerly the teeth were separated exclusively with the file, and these of very crude form and cut; doubtless much injury has been done by the use of such files, especially in unfavorable cases.

When any considerable portion of the dentine is to be removed,

the file is not the best instrument. Upon inflamed dentine it is exceedingly painful, it will often increase the inflammation; the jarring is unpleasant to the patient; it is liable to irritate the external periosteum. The action of the file is very tedious; wearisome to the patient and operator. The file is a valuable instrument, the place of which could not be supplied by any other.

When a separation is to be made that requires the removal of a considerable portion of the tooth, the chisels or heavy cutting instruments are preferable to any other. These, if of the proper form and temper, and kept sharp, are very efficient for cutting away portions of the teeth. The execution with them is far more rapid than with the file, and far less unpleasant to the patient. The removal of sensitive dentine can be effected with but little or no pain, and without a liability of increasing the inflammation, or producing irritation or disease of the external periosteum. The force of the instrument is resisted by the entire attachment of the tooth; and the pressure by the instrument is made almost in a line with the axis of the tooth. In the use of these instruments the contiguous teeth do not suffer injury as is often the case with the file.

The manipulation with these instruments is very simple. For separating the front teeth the instrument is firmly held in the hand, and the thumb placed on the points of the teeth, the instrument placed on the teeth at the point from which the portion is to be removed, and pressed gradually toward the gums, cutting its way freely; all effort to thrust it between the teeth as a wedge, or before it has cut its way freely, must be avoided. In this way, as much of the dentine can be removed, as is desired, in a few moments. This class of instruments is invaluable for the formation of the V shaped spaces between the bicuspid and molars. It requires a prolonged use of the file to make these separations properly; and hence the practice of attempting to fill the approximal cavities without a separation at all, operating through a small opening at the crown angle of the tooth or through small holes drilled through the outer or inner portion of the tooth. With these instruments, points upon the teeth can be approached, and operated upon with facility, that the file cannot touch. They should be kept sharp or they will be little better than the file. The third method of separation is by pressure. This in many

cases is preferable to either of the methods referred to ; and especially is this true in regard to the anterior teeth when it is important to preserve the natural form. To make a successful separation in this manner, several considerations must be kept in view. In the first place, there must be sufficient space between the contiguous teeth to permit the desired space to be made. If all the teeth are remaining and stand close together, it will be impossible to obtain much space by pressure, but if there is a slight space between some of the teeth, or a neighboring tooth has been removed, the object may readily be obtained.

The gums, periosteum, &c., should be in a healthy condition ; much injury may be done by attempting to separate the teeth, when the contiguous parts are in an irritable state. This operation is scarcely admissible in persons of a neuralgic diathesis. When the vital energy is weak, it is scarcely admissible, and particularly when there is an inflammatory tendency. But if attempted at all in such cases it should be very gradual, and with great care. In cases of this kind, much may be gained by prior treatment, that should be constitutional rather than local.

There are some cases in which it is best to make the separation by pressure, partly, and then dress off the thin, friable edges of the cavity, with the cutting instrument or file, and thus complete the separation. It should be determined before pressure is applied at all, whether the entire separation will be made by that means. Various materials have been used for separating the teeth by pressure. The following are the chief, viz : cotton, wood, india rubber and ligatures. The condition and character of the parts to be operated upon will indicate the material best adapted in any given instance. In a good constitution, the parts healthy, and the teeth firmly set, wood or india rubber may be indicated ; but in cases of an opposite character, these should be used very cautiously, or material less active, or, more easily controlled, be used. The amount of pressure to be made, and kept up will be governed by the susceptibility of the parts to irritation. Soreness usually occurs in a few hours after the introduction of the material between the teeth.

The pressure should be gradual and constant. The time necessary for the completion of this process is from ten to twelve days. There should be but one separation made at a time. The pres-

sure is applied slightly at first, and afterwards with more force as the patient will bear it.

The material should be re-applied every day. The teeth should be retained apart until the soreness has abated ; and then operate. The process should be continued till ample space is obtained. Teeth that have been separated by pressure if not retained too long, return to their former position. It is supposed by some, that separation of the teeth by pressure is admissible only in young persons, or those under thirty years of age. Certainly these are most susceptible ; but it is proper, under favorable circumstances, thus to separate the teeth of persons of any age.—*Dental Register of the West.*

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GLEANINGS FROM MY JOURNAL, OF FIVE YEARS PRACTICE.

ON EXPOSED NERVES.

As the question of filling teeth, over exposed nerves, seems to be exciting more than usual interest at this time, I feel it a duty incumbent on me to contribute my *Journal Entries*, not that I expect to enlighten the whole dental profession, but probably it may be of service to the young and inexperienced practitioner of our worthy calling. For the last five years I have used spirits of camphor in allaying sensitiveness of the nerves in teeth ; I speak here from actual practice and record. I have noted down in my Journal thirty cases, and every case where the nerves have been exposed, and in a healthy state, I have filled and saved the teeth. I will now give my mode of operating. In the first place, I excavate the cavity, and when caries have went so far as to approach the dental pulp, I apply the spirits of camphor on a little raw cotton to the exposed nerve, which in nine cases out of ten, will arrest the hemorrhage in one or two applications ; when arrested, I continue excavating, until I have a good cavity. After the cavity is well cleansed, I then apply the camphor three or four times, in as many minutes, and you are ready to introduce the gold. In this part of the operation it is very important the foil should be condensed very firmly, and finished well. I will

here state, that after introducing your camphor to the exposed nerve, as above directed, it will produce no pain on introducing the foil immediately over the exposed nerve, this is a good test to determine when you have applied the remedy sufficiently.

The teeth I have been so fortunate with, have been incisors and canines of superior maxilla; I have also experimented on bicuspid and molars which are doing as well as the first named, and I am confident will act well; they have not been on test so long as the first-named. The beauty of this operation is, in the teeth retaining their natural beautiful transparency and vitality. It seems that by the powerful astringent properties of the camphor, the nerve is contracted within its cavity, and if well filled, heals from first intention. I have tried arching, capping, and risodontropy on exposed nerves, and I must confess I have not succeeded so satisfactorily as many other operators. The remedy is applied in no case but healthy exposed nerves.

CHILLICOTHE, O.

J. SANFORD.

Dental Register of the West.

FRACTURE OF THE OS HYOIDES.

BY PROF. T. WOOD, M. D.

Through the kindness of our friend, Dr. P. G. Fore, of this city, we were invited to examine a case of fracture of the *os hyoides*, that had occurred about one week before we saw it, in one of his patients. The patient was a female, about thirty years of age, who had fallen down the cellar steps, striking the prominent part of the larynx and hyoid against a projecting brick, severely injuring the larynx as well as fracturing the bone. The fracture was on the left side, and near the junction of the great *cornu* with the body of the bone. Crepitation was distinctly felt, on pressing the bone between the thumb and finger; or when the patient would swallow; though, at this time, the severe symptoms that followed the accident, and continued several days, had somewhat subsided. Immediately after the accident, there was profuse bleeding from the fauces, and she experienced great difficulty and pain in the act of swallowing, and the power of speech was

almost entirely lost. On attempting to depress or protrude the tongue, she felt distressing symptoms of suffocation. Considerable inflammation and swelling of the throat and larynx ensued, and continued in some degree up to the time of our visit.

To-day (about four weeks since the accident), Dr. F. informs us, that the patient has so far recovered as to be able to converse, though the voice is somewhat impaired. She is yet unable to swallow solid food, and is wholly sustained by fluids.—*Western Lancet*.

CASE OF FRACTURE OF THE SUPERIOR MAXILLA, CAUSED BY A FALL OF ABOUT TEN FEET FROM A SCAFFOLDING.

UNDER THE CARE OF DR. CLARK. REPORTED BY L. M. SARGENT, HOUSE-SURGEON.

May 22d, 1½ o'clock, P. M., patient arrived, about half an hour after the accident. He walked into the Hospital from the carriage which brought him. Soon after his arrival, there was shivering with faintness, and some symptoms of concussion. Pulse 64, not remarkable.

On examination, right nasal ala was found to be very irregularly torn up about half an inch, and forehead slightly contused. There was considerable ecchymosis about eyes, especially the right, and the nose was slightly out of a straight line, with the concavity on right side. The ossa nasi were apparently uninjured, but on taking the nose by the middle, close to the face, i. e., by nasal processes of superior maxilla, distinct crepitus was perceived, and a lateral motion, indicating an irregular and quite extensive fracture. While examining patient, he coughed, and rendered apparent a slight emphysema over forehead, indicating a still further extent of fracture. This crepitated upon pressure, and soon became unmistakeable. On examining the interior of the mouth, the left half of the upper teeth moved to and fro (especially outward) with their alveolar process. The alveolar process on the right side, corresponding with the incisors, was quite moveable, but stationary further back. On inserting the thumbs into the mouth, and taking the superior maxillæ, one in each hand, they moved readily on one another with a shuffling motion, as if sep-

arated at the symphysis. The inferior maxilla was apparently uninjured, excepting the loss of the left lateral incisor.

Friction was applied to the surface, and a cloth wrung out in warm water to epigastrium. The edges of nasal cartilage were then brought into apposition, and united by suture, after which Barton's bandage was applied (part of it acting so as to compress the emphysema) and cold water dressing lightly over eyes and nose. Liquid farinaceous diet.

7½, P. M.—Patient groaning and tossing in bed, and almost constantly voiding blood and clots from the nose and mouth. Complains that he cannot breathe and is choking with blood. Much relieved by having nasal fossæ syringed with warm water. Opiate at bed-time.

May 23d.—Patient unable to sleep at all last night. Right eye entirely closed this morning. Ecchymosis extreme. Much swelling over right zygoma. Much pain, jactitation and howling nearly all day. Headache. Pulse 72, strong and full. Sol. magnes. sulph., ʒiv.

24th.—Patient still noisy and suffering, so much that he was removed to the Touro ward on account of his disturbing the other patients.

25th.—Right eye entirely open. Breath exceedingly offensive from decomposing blood in the cavities. Nostrils clogged with blood and mucus. Syringed with sol. sod. chlorid. and water.

29th.—Ecchymosis almost gone. Patient says he feels "weak and down-hearted." Relieved by broth.

30th.—Swelling entirely gone on right side, and nearly so on left. Patient declares he feels no pain or soreness anywhere except in left cheek when it is handled.

31st.—Motion diminished, and patient progressing rapidly to recovery.—*Boston Med. and Sur. Journal.*

PROSECUTIONS FOR MALPRACTICE.

Prof. Frank Hamilton, of Buffalo, New-York, in submitting his valuable report on "Deformities after fractures," to the American Medical Association at its last meeting, makes some verbal remarks which we find reported in the *Buffalo Medical Journal*

for June, and which are so interesting, that we take pleasure in transferring them to our pages :—

“ Dr. Hamilton said that he had a word to say which did not belong to the report. Prosecutions for malpractice have become so frequent that surgeons were alarmed, and not a few were abandoning the profession, or refusing altogether to undertake the treatment of grave surgical accidents, and especially of fractures. So frequent were these prosecutions that members were no longer surprised at such statements. If they had heard the speaker say that lawyers were abandoning their profession from this cause, they would have been startled, but to us the fact is familiar.

“ It is proper for us, then, to interrogate ourselves. Why is it that we are held to an accountability so much more strict than any other professional men, or than any other artisans? Is it because there are jealous and designing men in our own ranks who instigate these suits? No doubt such men may be found, but only as an exception. The fact is that surgeons have sometimes been mulcted in damages simply because the jury believed, from the united character of the medical testimony, that it was a conspiracy, and the more conclusive the testimony, the more certain, with some jurors, is the defendant to suffer.

“ Is it chargeable to the members of another profession—to the lawyers? There may be some men in the profession of law, also, who, driven by the sheer necessity of their circumstances—by their extreme poverty, or who, without any such apology, with only loose notions of right and wrong, encourage and undertake such suits—such are the men who hang about the Tombs, in New-York, and who may be found, more or less, in every town—but the speaker has reason to believe that honorable and intelligent lawyers seldom countenance these prosecutions. That eminent jurist of the State of New-York, Joshua Spencer, has told Dr. Hamilton, that for himself he does not think he ever commenced a suit of this character, although he has been frequently retained as counsel, and he believes his brethren, generally, look upon these complaints with suspicion and refuse to meddle with them.

“ Where, then, must we look for an answer to the question, why are these prosecutions against surgeons so frequent? Let the gentleman be assured, the causes are to be found in the *very imperfections of our art, and in our own unwillingness to admit these*

imperfections. Surgeons have claimed too much, and it cannot certainly be expected that the world will demand of them less than they claim for themselves."—*Med. News.*

From the London Medical Times and Gazette.

OBSERVATIONS ON DENTAL SURGERY IN REPLY TO MR. MACKENZIE'S PAPER.*

BY EDWIN SERCOMBE, M. R. C. S. LATE DENTIST TO THE PADDINGTON DISPENSARY.

It is not my intention to discuss in detail Mr. Mackenzie's opinions as to the curability of toothache, as expressed in your Journal of May 26th, for I feel that dental subjects are not of sufficient interest to the large proportion of your readers to justify any considerable encroachment on your space, but to offer a few remarks on one point in particular.

I may say, in passing, that I approve the paragraph on the value of amalgams in cases where "the caries has left the ivory so thin over the pulp cavity, that any attempt to press gold into the carious cavity would cause severe pain by forcing up the roof of the chamber upon the pulp." "A burnt child dreads the fire." I have suffered most severely from this cause in my own mouth, and I have seen numerous instances in others, where the necessary pressure for packing gold leaf securely into a large cavity has caused the thin layer of bone to bend and impinge upon the dentinal pulp, and thus produce violent inflammation, which, in most of the cases, has required the extraction of the tooth.

There are paragraphs which I disapprove, and others which I cannot understand. Of the latter, I will refer to two statements in different parts of the paper. The first is: "I am individually of opinion that the guillotine is as legitimate an instrument for the cure of headache as the forceps for the relief of toothache;" and the other is, "Should the former (toothache) only be present the remedy is at hand; but it may be found that the sockets of one or more of the other teeth are affected, in which case, should the pain be severe, the forceps is generally our only resource, and the anodynes for those with inflamed pulps."

The first of these sentences would be intelligible enough but for the second, for it is expressed in few and decided words, and it

* Mr. Mackenzie's paper appeared in the July number of the Recorder.

may be paraphrased thus :—On no account is a tooth whose dentinal pulp is affected with inflammation to be extracted, for the pain can be abated, and in time entirely removed by the application of camphor, opium, morphia, and the like ; for “it would seem absurd to suppose that the same action upon so minute a structure as the dental pulp should defy our skill,” when “it is reducible in other tissues by medical interference ;” but the second sentence teaches us that this same action does defy our skill when it affects the sockets (I suppose the periosteum of the sockets) of one or more teeth.

Before I proceed to the subject which has called forth these remarks, I must express my disapproval of the stopping forceps sketched and recommended by Mr. Mackenzie. I remember to have been shown similar instruments by Mr. Robinson some years ago ; so, although they may be original, as far as Mr. Mackenzie is concerned, they have been in the hands of other dentists for some years. The disagreeable sensation experienced when a tooth is squeezed between the jaws of a pair of forceps, is, in my opinion, an insuperable objection to their use, as they are not absolutely necessary for the operation.

I will now pass on to the special object of these remarks, the treatment of exposed nerve. I quite agree with Mr. Mackenzie, that in a large number of cases, where the dentinal pulp is laid bare by the progress of the caries, the tooth may be saved, and rendered artificially sound again, by wise and patient treatment ; but we are at issue as to the mode of treatment necessary to secure so desirable an object. Years ago I tried most perseveringly the very plan indicated by Mr. Mackenzie ; I gave it a fair and prolonged trial, but the result was not sufficiently satisfactory to justify adopting it as a rule of practice. I proceeded, first, to remove the carious bone, and then applied either acetate of morphia, or acetate of morphia combined with the oxide of arsenic, in equal proportions, nitrate of silver, chloride of zinc ; in fact, both escharotics and anodynes, and the two combined ; each and all of which I have found sufficient for the purpose in different cases, so that, in two or three days, the teeth have generally been quite free from pain, and capable of bearing immediate stopping. Before introducing the metal, which was generally, in these cases, succedaneum, I protected the pulp cavity by a piece of gold plate

hammered into a cup-shape, and lined with lead foil; which I never found the smallest difficulty in getting into its place in the tooth, as I adopted the plan in common use among jewellers when mounting small precious stones, of rolling a piece of wax to a fine point with my fingers, bending it at a suitable angle, and then sticking the cup to its point, and so carrying it to its place in the tooth. At first these cases all promised well, but in a few days there appeared in the majority a low grumbling pain, which was always sensibly increased when anything, either above or below the temperature of the mouth, touched the tooth, the lesser pain continued more or less constantly, indicating a measure of chronic inflammation in the dentinal pulp, which, by exposure to cold wind or other exciting cause, was changed to acute, and where prompt attention was not given suppuration rapidly followed; for relief, the patient generally demanded extraction. Such was the general result as far as my experience has gone in such cases; but other results may follow, leading also to the loss of the tooth, as the following case very strikingly proves. In 1840, a gentleman had several teeth stopped, but in one, the inferior anterior left molar, the dentinal pulp was exposed. It was treated with an anodyne, and in a few days it was quite free from pain. A gold cap was fitted over the pulp cavity, and the tooth was filled with amalgam. In a few days, a slightly uneasy sensation was experienced in the tooth, which was unheeded by the patient, until, upon general cold being taken, it increased to violent pain, when advice was sought. Leeches, with pil. hyd. and senna draught, produced relief. Time went on, the tooth was never altogether free from pain. About a year after the tooth was stopped, conjunctivitis appeared first in one eye and then in both. Treatment was employed with but partial success; the conjunctivitis became chronic for a period of two years or more, when, upon an abscess forming on the border of the sterno-cleido mastoideus, its lower third, it passed away. As the abscess continued to discharge for a very long period, a thorough change of air was recommended, and a trip to the Continent was taken with partial advantage; but on returning home, exposure to a cold wind on deck brought on severe pain in the formerly troublesome tooth. I was called upon to remove it, but, as the symptoms were those of periostitis, I objected, and prescribed leeches

and blue pill. The next day my patient insisted on having his own way, and the tooth was extracted. On external examination, I found two or three small exostoses on the roots, and, upon making a section, I found the pulp cavity filled with ossific matter. The amalgam and gold cap were firmly in their place. My patient returned in a few days to the country; in a week or two the abscess healed, and to the present time, he has had no return either of abscess or conjunctivitis.

Here the pulp did "emulate the snail;" but it did not stop with repairing its house.

The preparation, which is a most interesting one, is in my possession.

From this case and others, which I could cite, if necessary, I long since came to the conclusion that a metallic stopping should not be introduced into the cavity for some considerable time after the dentinal pulp has been either destroyed at the exposed spot or caused to recede from it, but some temporary non-metallic material, which the patient should be able easily to renew once or twice a day. The reason appears to me obvious. The pulp, in the vast majority of cases, attempts to repair its house, if protected from irritation and exposure; but it is absurd to act as though it had accomplished this at the end of two or three days—a long time, I believe, is necessary, generally months. If, then, a metallic stopping be introduced into a tooth, before this is accomplished, although it would effectually keep out all irritating matter, it would, from its power of absorbing caloric, be constantly conveying shocks to the pulp, and so keep it in a state of irritation, which would result either in suppuration or in a state of things similar to that described in the case above cited. But, if a non-conductor of caloric can be employed as a temporary plug, not only will the pulp be saved from all irritating matter, but also from sudden alternations of temperature, and thus it will have a fair chance of accomplishing its work. Such a stopping can be formed of wool saturated with some gummy material, mastic, wax, or the like, with which a sedative, or astringent, or any other desirable agent may be combined. In a variable time a sufficient deposit of bone will have taken place, if the case be a successful one, to allow of the cavity being filled with a metallic stopping, such as sponge gold or amalgam, without the risk of imparting destructive shocks to the delicate and sensitive pulp.

6, Somers-place, Hyde-park, June 15.

EDITORIAL.

CORRESPONDENTS, SUBSCRIBERS, EXCHANGES, &c., are requested to direct all Communications relative to the financial or business departments of this Journal, to "SUTTON & RAYNOR, 609 Broadway, N.Y.;" and articles for publication, books for review, exchanges, reports of society meetings, and all correspondence belonging to the editorial department, to "EDITOR OF DENTAL RECORDER, 139 Fourth Avenue, N. Y."

It was our good fortune to be enabled to attend the meetings of the American Dental Convention, held in Philadelphia last week. There was a very large attendance, Dentists from all parts of the United States being present.

At the last annual meeting of the American Society of Dental Surgeons, held at Cincinnati, in May last, a proposition to dissolve was discussed, and a committee appointed to report to an adjourned meeting to be held at Philadelphia on the 2d of August. At the appointed time, the Association met at the Assembly Rooms; but few members being present, the subject of dissolution was reported upon favorably, and after some discussion again postponed, and the committee continued for one year longer. The Society adjourned to meet in the city of New-York in August next.

A large majority of the Dentists present in Philadelphia last Tuesday, were not members of the American Society. These had come pursuant to a call made by the Dentists of that city, with a view to the establishment of a National Association upon an enlarged and liberal basis. The success attending this experiment must be most gratifying to those gentlemen who first advocated the plan, and we would here remark the fact, unprecedented, we believe, in the history of Dental Associations, that none of its originators accepted official positions. The adoption and *enforcement* of the "five minute" rule, gave all an opportunity to express their opinions upon the subjects discussed, and effectually put a stop to those long-winded philosophers, whose labored efforts are so effectual in wasting time, crushing inquiry, tiring hearers, and disgusting sensible men.

We certainly never attended a meeting of Dentists where so many subjects were so sensibly and *harmoniously* discussed, and where so much good feeling and generous hospitality was exhibited. One would judge from the proceedings in and out of Convention, that all had lived their lives in Philadelphia, and that their conduct had given the city its name. The following from the correspondence (corrected) of one of our dailies, gives a tolerable idea of the proceedings:—

"After considerable discussion, the proposition prevailed, and the old association was quietly consigned to a place among the things that were, and the American Congress of Dental Surgeons commenced its existence. The experiment has proved in the highest degree successful, and the originators of the move have reason to be proud of the benefit which they have been instrumental in conferring upon a most important branch of science.

"The Congress was permanently organized by the election of Dr. J. B. Rich, of New-York, as President; Dr. J. S. Clark, of New Orleans, as Vice-President; Dr. Chas. Bonsall, of Cincinnati, Recording Secretary; and Dr. J. H. McGuillen, of Philadelphia, Corresponding Secretary.

"Upon taking the Chair, Dr. Rich made a brief speech, in which he congratulated the Congress upon the bright prospect before them, and alluded to the great benefit likely to accrue from the liberal views and the enlarged sphere of action which the Convention gave to its members.

"The rest of the day was occupied in a discussion upon the use of crystal gold for filling cavities.

"On Thursday morning, some of the members thinking that the word "Congress" was rather too loud sounding, and fearing that the term would be taken as an exhibition of arrogance, moved that the word Convention be substituted. The motion, after a full discussion, prevailed.

"The remainder of the session was spent in discussing the best method of keeping the mouth and cavity dry during the operation of plugging, and of destroying the sensibility of the dentine during operations. The debate was very interesting.

"The next morning, the question before the Convention was as to the best means of separating the teeth, with a view to examination or filling. This was the most interesting discussion of the session, and nearly every member of the Convention took part in it. Some advocated the free use of the file in such cases; but the great majority gave their testimony in favor of separating the teeth by means of India rubber and wedges of various kinds. This subject occupied the attention during the entire morning.

"The resolution fixing on New-York as the place of meeting next year was reconsidered, but finally carried, and the Convention voted to meet in New York in August next.

"A motion was made that the Convention recommend to the profession the establishment of local societies throughout the country for dental improvement. The resolution was unanimously adopted; and after passing a vote of thanks to the officers of the Convention, and to the Dentists of Philadelphia, for their kind and hospitable attentions to their brother professors from abroad, the Convention adjourned, to meet agreeable to the resolution in regard to next year's Convention.

"It was expected by many that the subject of chloroform in dental surgery would find its way before the Convention, incidentally or otherwise; but, owing to good management, or the great interest of other discussions, it failed to come up.

"A pleasant reunion took place at Parkinson's saloon, on Thursday evening, being a banquet given by the dentists of this city to the members of the Convention. About one hundred persons were present, and the manner in which the viands were disposed of gave assurance that the dentists were perfectly at home in that department. The supper was served up in superior style, and nothing was omitted to render the entertainment everything that could be desired. Dr. Elisha Townsend, of Philadelphia, welcomed the visitors in a neat and appropriate speech; after which all did ample justice to the delicacies before them.

"Altogether, this Convention has been the most important meeting of scientific men ever held in this country, and probably the largest meeting of dentists ever held in the world. The good which such assemblages must have upon the comfort and well-being of the people at large, cannot but be apparent to all. The importance of faithful and skilful operations upon the teeth must be acknowledged, and in no way can the public be so well secured from quacks as by such interchanges of experience as has been made during the sessions of this Convention. The experiment has become a success, and we may look for the tangible evidences whenever our necessities place us in the dentist's hands."

In our last number we published a list of those gentlemen upon whom the Philadelphia College of Dental Surgery had conferred Honorary Degrees. Among these and marked "deceased," was the name of Dr. O. R. Post, Brattleborough, Vermont. Since then we have received a letter from that gentleman, who very reasonably objects to this summary method of bringing his earthly career to a close.

New-York Dental Recorder;

DEVOTED TO THE THEORY AND PRACTICE OF

Surgical, Medical and Mechanical Dentistry.

Vol. IX.] SEPTEMBER, 1855. [No. 9.

KÖLLIKER'S MICROSCOPICAL ANATOMY.

[One vol. 8vo. Published by Lippincott, Grambo & Co., Phila.]

SPECIAL HISTOLOGY. OF THE TEETH.

[CONTINUED FROM PAGE 172.]

§ 142. *Development of the Teeth.*—The development of the twenty milk teeth commences in the sixth week of fœtal life, by the formation of a groove in the upper and lower margin of the jaws, in which, up till the tenth week, twenty dental papillæ gradually make their appearance. Partitions are now developed, so that each papilla soon lies in a special cavity. In the course of the fourth month, these cavities gradually contract, the papillæ at the same time assuming the forms of the future teeth, and finally they close up completely; this takes place, however, in such a manner that a little cavity is developed above each “tooth-sac,” and thus “reserve sacs” in which the pulp begins to be developed in the course of the fifth month, are formed for the twenty anterior permanent teeth.

Fig. 194.

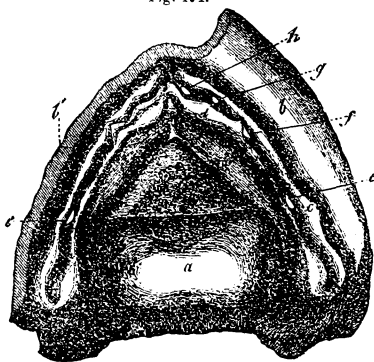
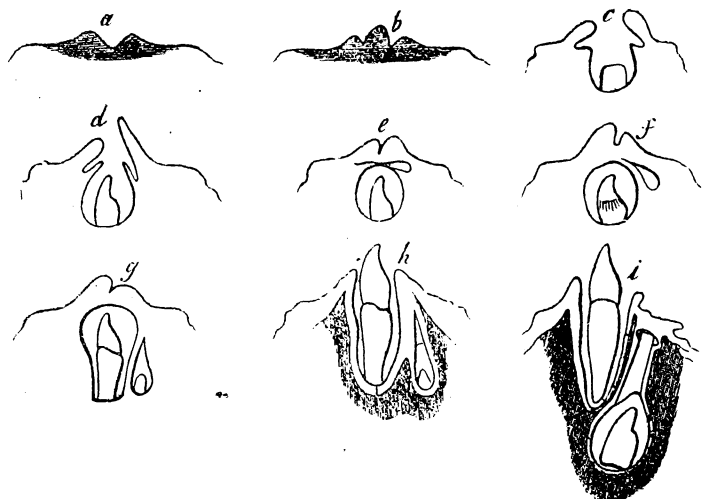


FIG. 194.—Lower jaw of a human fœtus, nine weeks old, magnified 9 diameters : *a*, the tongue thrown back ; *b*, right half of the lip depressed ; *b'*, left half of the lip cut off ; *c*, outer alveolar wall ; *d*, inner alveolar wall ; *e*, papilla of the first molar ; *f*, papilla of the canine ; *g*, of the second ; *h*, of the first incisor ; *i*, folds where the *ductus Riviniani* subsequently open.

Fig. 195.



These “*reserve sacs*” at first lie above the milk sacs, but by degrees they retreat backwards, and are received into hollows of the bony *alveoli* as they are formed round the milk teeth (Fig. 195, *g, h*). Those of the incisors and canines eventually become completely separated from the alveoli of the corresponding milk teeth, but those of the premolars* open into the bottom of the alveoli of the deciduous molars.

FIG. 195.—Diagram of the development of a milk-tooth, and of its corresponding permanent tooth, after Goodsir: *a*, dental furrow; *b*, the same, with its *papilla*; *c*, the same beginning to close, with the rudiment of the reserve cavity; *d*, the same, still more closed; *e*, tooth-sac, completed, with a “reserve cavity;” *f*, the reserve cavity moving backwards; *g*, the same become quite posterior, with a pulp; *h*, the *alveoli* of both sacs are forming, the milk-tooth has emerged; *i*, the permanent tooth forming, its deeper seated sac has a *gubernaculum*.

* [Instead of the loose phraseology “small” and “large” molars, &c. we have adopted the philosophical nomenclature of the teeth, introduced by Professor Owen (see his Article on the Teeth, in Todd’s Cyclopædia), and thus explained by him:—“Those teeth which are implanted in the premaxillary bones, and in the corresponding part of the lower jaw, are called ‘incisors,’ whatever be their shape or size; the tooth in the maxillary bone, which is situated at or near to the suture with the premaxillary, is the ‘canine,’ as is also that tooth in the lower jaw, which in opposing it, passes in front of its crown when the mouth is closed. The other teeth of the first set, are the ‘deciduous molars;’ the teeth which displaces them vertically, are the ‘premolars;’ the more posterior teeth which are not displaced by vertical successors, are the molars properly so called.”]

It results from this, that the so-called bicuspid and “first molar” of the permanent set in man (Professor Kolliker’s “small molars”) are the premolars; being, in fact, the third and fourth of the typical dentition; the first and second premolars

The sacs of all these teeth are produced at their apices into a solid cord, which extends either to the gum, or, as in the two premolars, to the periosteum in the bottom of the *alveoli* of two deciduous molars (Fig. 195, *i*), and has been erroneously described as a *gubernaculum*, or guiding cord for the teeth in their eruption.

The sac of the anterior of the three permanent molars, arises, together with its *papilla*, in the sixteenth or seventeenth week, quite independently, from the posterior extremity of the primitive dental groove, and closes in such a manner that a reserve sac remains between it and the mucous membrane (Mikr. Anat. Fig. 206). It is not till the seventh or eighth month after birth that the latter elongates behind the first sac, arches into the margin of the jaw, produces a papilla from its base, and becomes constricted off into the sac of the second molar. The remainder of the cavity falls into a line with the other sacs, and forms that of the wisdom tooth.

The formation of *milk teeth* begins at about the fifth month of foetal life, and at the seventh, ossification has commenced in all of them. The first step is the formation of a little scale of dentine upon the apex of the pulp; in molar teeth there are at first several of these scales, corresponding with the several elevations of the pulp, but they soon coalesce. Immediately after the appearance of this dentinal scale, a thin layer of enamel is deposited from the so-called enamel organ upon the roof of the sac, and which coalescing with the dentine, forms the first rudiment of the crown of the teeth. The scale of dentine extends over the pulp and becomes thicker, so that it soon rests like a cap upon the pulp, and finally forms a sort of capsule for it, which, as ossification proceeds and the pulp diminishes, closely and completely embraces it; the deposition of enamel goes on simultaneously, so that it soon proceeds from the entire surface of the enamel organ, and becomes more and more considerable. In this manner, the whole enamel is eventually deposited around the dentinal layer of the crown, while the enamel organ and the pulp gradually diminish, until the former is represented only by a delicate membrane; and the latter presents similar relations to that of the perfect tooth. As

and the third incisor of the typical dentition, not being developed in man. The nomenclature of the teeth, from being merely technical and arbitrary, has thus, by Professor Owen's recourse to development become scientific.—Trs.]

yet there exists no trace of either fang or cement; they are not formed till the crown is nearly complete, and the tooth is about to emerge. About this time the pulp undergoes a considerable longitudinal growth, while the enamel organ becomes atrophied; and upon the newly formed portion only dentine, that of the fang, is developed. The tooth thus forced upwards, begins to press against the upper wall of its sac, and the firm gum which is closely united with it; in which an independent process of absorption also takes place, and the tooth finally makes its appearance. The gum now contracts around it, and the rest of the dental sac becomes closely applied to the fang, and constitutes the alveolar periosteum.

The milk-tooth attains completeness: 1, by the addition of the remainder of the fang, and the constant elevation of the crown to its normal length; and 2, by a deposition which takes place from the sac, now united with the alveolar periosteum, which commenced even before eruption, and by which the cement is applied around the fang, while, at the same time, the tooth is thickened by internal deposition, the pulp diminishing to a corresponding extent. In teeth with several fangs, the pulp, which is at first simple, divides as it elongates, near its point of attachment, a separate fang being developed around each portion. *The eruption of the milk teeth* takes place in the following order:—central incisors in the lower jaw in the 6th—8th month; central incisors of the upper jaw a few weeks later; lateral incisors in the 7th—9th month, those of the lower jaw first; anterior molars in the 12th—14th month, those of the lower jaw first; canine in the 16th—20th month; second molars between the 20th and 30th months.

The *permanent teeth* are developed in precisely the same way as the milk-teeth. Their ossification begins, somewhat antecedent to birth, in the first molar, extends, in the first, second, and third years, to the incisors, canines, and premolars, and finally reaches the second molar; so that in the 6th—7th year there are 48 teeth co-existing in the two jaws, *i. e.*, twenty milk-teeth, and all the permanent set with the exception of the wisdom teeth (third molar). When the shedding of the teeth takes place the bony partitions, which separate the *alveoli* of the permanent from those of the milk-teeth, are absorbed, and, at the same time, the fangs of the latter gradually disappear from below in a manner

which is not yet understood. The permanent teeth, whose fangs in the meanwhile have elongated, thus become placed immediately under the loosened crowns of the milk teeth, which finally, as the others protrude, fall out and make way for them. The permanent teeth emerge in the following order: first molar in the seventh year, inner incisor in the eighth year, lateral incisor in the ninth year, first premolar in the tenth year, second premolar in the eleventh year, canine in the twelfth year, second molar in the thirteenth year, third molar (wisdom tooth) between the seventeenth and nineteenth years.

The *gum* in the foetus, and especially in newly born infants before the eruption of the milk-teeth, is whitish and very firm, almost cartilaginous, whence perhaps it has also been called gum cartilage, although it has not the slightest resemblance to cartilage in structure, but consists of the ordinary elements of mucons membrane, but with a considerable admixture of a more tendinous tissue. The bodies of the size of millet-seed, contained in it, described by Serres, the so-called *glandulae tartaricæ*, which are

Fig. 196.

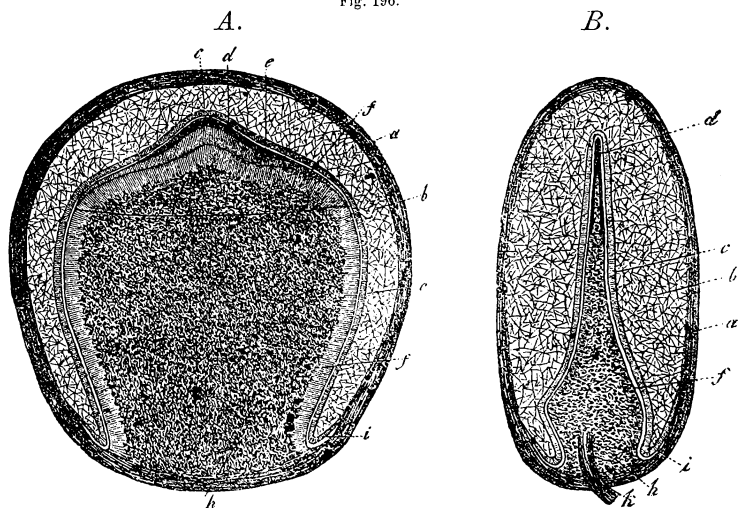


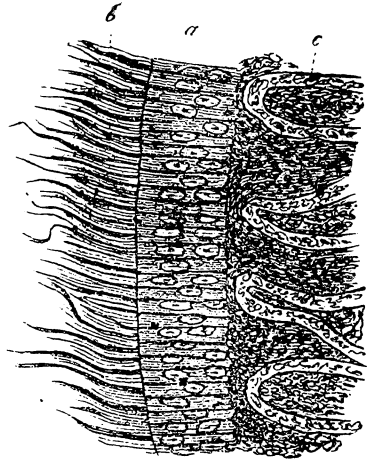
FIG. 196. — *A*, tooth-sac of the second incisor of an eight months' foetus, from the broad surface, magnified 7 diameters: *a*, dental sac; *b*, enamel pulp; *c*, enamel membrane; *d*, enamel; *e*, dentine; *f*, dentinal cells; *g*, limits of the cap of the dentine; *h*, dental pulp; *i*, free edge of the enamel organ. *B*, first incisor of the same embryo from the narrow surface: letters as before; *a*, dental cap *in toto*; *k*, nerves and vessels of the pulp.

supposed to secrete the "tartar" of the teeth, are aggregations of epithelium, and are probably pathological* (see Mikr. Anat. II. 2, p. 92).

The *dental sacs* consist of connective tissue, in which vessels and nerves are distributed; from their base proceeds the *dental pulp*, which, in form, resembles the tooth to which it belongs, and consists of an internal portion rich in vessels, and eventually in nerves also, and of a non-vascular external portion. The latter is bounded by a delicate structureless membrane, the *membrana præformativa* (Raschkow), which has no further relation to the development of the tooth. Beneath this, lie cells of 0.016–0.024 of a line in length, and 0.002–0.0045 of a line in breadth, with very beautiful, vesicular nuclei, and distinct, single or multiple nucleoli; they are arranged close together over the whole surface of the pulp (Fig. 197), like an epithelium, though not so sharply defined internally as it would be,

but gradually passing, at least apparently, by smaller cells, into the parenchyma. In vascular pulps (Fig. 197), an additional boundary line may be traced, inasmuch as the capillary loops in which the vessels terminate, do not penetrate between the cylindrical cells, but end close to one another upon their inner surface; so that, considering that the dentine is produced by the cells in question, we might be justified in terming them the *déntinal membrane*, or *membra eboris*. The internal portions of the pulp consist, throughout, of an origi-

Fig. 197.



* [They have a diameter of from 0.24–0.36 of a line, and are composed throughout of numerous concentric layers of ordinary epithelial plates, or of softer scales, with cholesterine crystals and granules. Besides these, microscopic bodies of 0.02–0.12 of a line, soft, and with only indications of lamination, are found in the gum, (Kolliker, l. c.). The true nature of these glands was pointed out by Purkinje and Raschkow. — Trs.]

FIG. 197. — Surface of the dentinal pulp of a newly-born infant: a, dentinal cells; b, their appendages; c, vascular part of the pulp; magnified 300 diameters.

nally granular or homogeneous, afterwards more fibrous *matrix*, containing many rounded or elongated nuclei, which must be regarded as a sort of connective tissue. *Vessels* are developed in great numbers in the pulp at the period when ossification commences; the most numerous perpendicular loops of capillaries of about 0.006 of a line existing in contiguity with the ossifying surface. The *nerves* accompany the vessels, but are developed later; their number is very considerable, and their distribution resembles that in the pulp of the perfect tooth.

The *enamel organ* (*organ adamantinæ*), is applied to the pulp like a cap by its internal, concave surface, and is connected externally with the dental sac, in such a manner, however, that at the base of the pulp it presents a very small free edge. Its structure is very peculiar. The principal mass consists of anastomosing stellate cells (Fig. 196, *b*), or reticulated connective tissue, containing in its meshes a great quantity of fluid, rich in albumen and mucus. This gelatinous connective tissue is most abundant immediately before the commencement of ossification, and in its earliest stages. Thus, in the fifth and sixth months it measures $\frac{1}{10}$ — $\frac{2}{3}$ of a line; in the new-born infant, on the other hand, only 0.16–0.2 of a line. At this period it contains vessels in its outer third, and its net-work is metamorphosed into true connective tissue (Mikr. Anat. ii. Fig. 211). On the inner side of the spongy tissue of the enamel organ, lies the so-called *enamel membrane*, *membrana adamantinæ* (Raschkow), a true cylinder epithelium, of which it need only be said that its cells measure 0.012 of a line in length, and 0.002 of a line in breadth, are finely granular and delicate, and possess nuclei frequently situated at the ends of the cells.

The *development of the dental tissues* has, hitherto, always been regarded as a very difficult subject. The simplest relations are presented in the enamel, where there can be no doubt whatever that the enamel cells become, by their complete ossification, the enamel fibres. As soon as only a small portion of the cells has become ossified (without the previous deposit of calcareous matter in a granular form), a little scale of enamel is recognizable upon the somewhat larger, cap of dentine, which has also just been produced. The deposition of calcareous matter in the cells constantly advances outwards, until at last they are entirely

converted into enamel fibres, and extends, at the same time, to other cells, so that the layer of enamel increases in width. During this process, the enamel membrane does not disappear in the locality in which ossification commenced, but retains, there and elsewhere, the same thickness, so long as the deposition of enamel continues: its ossifying part, therefore, must be replaced by the incessant development of new substance, which takes place apparently, not by the apposition of new cells, but by the continual growth of the old ones. The enamel organ has assuredly some very important relation to the development of the enamel; probably serving by the abundance of albumen and of mucus in its meshes, as a storehouse, out of which the enamel membrane, distant as it is from bloodvessels, is enabled to draw the materials for its increase. In fact, the spongy tissue is seen to decrease more and more during the development of the enamel, and finally, when the enamel is complete, to disappear.

In the development of the *dentine*, as in that of the enamel, it is not the whole pulp which shares in the process, but only its most external, epithelium-like layer of cells, which appears to maintain a constant thickness by the elongation of the original cells, accompanied by a continual multiplication of their nuclei (Mikr. Anat. ii. 2, p. 103 *et seq.*) I by no means intend to assert that one and the same cell suffices for the whole duration of the development of the dentine, although this is not at all inconceivable; indeed, I consider it possible that the dental cells are, from time to time, replaced by others, which are formed upon their inner surface; but what I deny is, that the whole pulp is simply changed progressively, from without inwards, into dentinal cells and ossified, and I am of opinion that, like the spongy tissue of the enamel organ, the only import of the pulp in the development of the dentine is to support the vessels which are necessary to enable the dentinal cells to grow at all.

The diminution of the pulp, therefore, is very readily intelligible without supposing it to be ossified from without inwards; it takes place, like the diminution of the contents of the wide Haversian canals of foetal bones when the lamellæ are deposited upon their walls, by a gradual resorption of its tissue, which, as in the latter case, is soft and full of juices; and it is by no means necessary to suppose any extensive retrogressive metamorphosis of its vessels.

DESTROYING THE SENSIBILITY OF DENTINE.

While attending the discussions, held by the American Dental Convention, last August, in Philadelphia, I took occasion to make known to the profession a method of obtunding the sensibility of dentine, which, I believed, to be new, and which had certainly met with unusual success in my practice.

The preparation used for this purpose is simply a mixture, or rather a paste, made of chloride of zinc and chloroform, and is applied directly to the affected part, producing the desired effect usually in from one to three minutes. If the ultimate object to be obtained is the removal of diseased or sensitive bone, success can be achieved more readily in this way than in any other which has come to my knowledge, as the removal of the bone can be persisted in while the preparation remains in the cavity, and without loss of time.

Chloride of zinc has been used for this purpose for several years; but is notoriously uncertain in its action. It very frequently *causes* intense pain, and quite as often fails to alleviate, in the slightest degree, the pain inflicted by the excavator or the file. Topical applications of chloroform and ether have, also, been used, with occasional success, though not sufficient to be at all reliable; but the two combined seem to produce much more uniform results, so much so, that I can often, at a glance, speak most positively with regard to the success or failure of the application. It would be reasonable to suppose that teeth, possessing a large share of animal constituents, would be most readily affected by an application of the nature alluded to above; and such is, unquestionably, the case. Fortunately, it is precisely this class of teeth that are the most sensitive when diseased, and, in these cases, the remedy above-mentioned is almost invariably successful. In very hard and dense teeth the action of the preparation is slower and more uncertain, sometimes rendering no service whatever. It must, however, be borne in mind that in these cases we are comparatively seldom required to call anything of this nature to our aid; such teeth not only resisting decay better than others, but are usually far less sensitive, and almost invariably are possessed

by those who can and do bear pain with a fortitude superior to those who are unfortunate enough to be the possessors of the more fragile and sensitive classes of teeth.

The advantages, I consider, to be gained by the treatment proposed, are : first, greater certainty of success, when the treatment is indicated ; second, a great saving of time, as compared with other methods, of obtaining the same results ; third, the convenient and safe manner with which it can be applied, (simply by dropping or brushing a small quantity of the paste upon the sensitive surface,) and the assurance that the application will not be followed by serious or injurious consequences.

C. W. B.

METALLIC DIES.

AN ESSAY READ BEFORE THE SOCIETY OF ASSOCIATE ALUMNI OF DENTAL COLLEGES,
MARCH 1ST, 1855. BY PROF. P. H. AUSTEN.

GENTLEMEN — Appointed, at your last meeting, to prepare an essay upon some practical subject, I have chosen one which has not, as seems to me, received from the profession generally, a sufficiently careful consideration. The selection of metals suitable for metallic dies, and the precautions necessary to insure their perfect accuracy.

I shall not attempt to exhaust the subject, for it is too comprehensive: nor presume to claim for myself infallibility, in every assertion that I may venture to make. In warning you against errors in practice and mistakes in theory, I desire to exercise towards others the courtesy due from every one to a professional brother; nor would I seek, by indulging in presuming arrogance or offensive personality, to add another to the list of those who, calling themselves friends of truth, become her worst foes.

This Society is made up, almost exclusively, of those who are yet young in professional experience. Myself not a Mentor in years, may I be pardoned if I here urge, briefly, upon you modesty in the assertion of your own views, however correct, and a gentlemanly forbearance in rectifying the errors of others. Few things are more repulsive than a young man's conceited as-

sumption of superiority in the midst of his grey-haired seniors. If some veterans in dental practice are far behind the newly fledged graduate, in a knowledge of the capabilities of his art and its more approved appliances, this only proves the advanced condition of the science, not any necessary inferiority of individual talent. Any tyro of fair capacity may, in a few years, master all that it took NEWTON a life to learn, and even more than this; yet, among the many would-be Newtons of the age, there are none whose fame will dim the lustre, that brightens the memory of the unpretending philosopher of old. Let us learn humility, standing with him on the shore of the unexplored ocean of science, where, at best, "each generation may pick but a few pebbles." Rest assured, gentlemen, these "pebbles" are never put to a worse use, than when you are engaged in throwing them at one another's heads. Craving your indulgence for what may seem a somewhat irrelevant introduction, I proceed at once to define some of the terms used in this essay.

The term IMPRESSION is applied only to the copy taken directly from the mouth, whether in wax, plaster, or gutta percha. The scope of this dissertation will not allow any description of this process. Suffice it to say, that inaccuracy here must necessarily vitiate the result, however correct the subsequent steps. Too often is it the case that the cause of failure, properly lying here, is unjustly attributed to the shrinkage of the metallic dies, the operator blaming the innocent metal, sooner than admit the possibility of *his* taking an inaccurate impression.

The term CAST is applied only to the plaster cast, which is taken from the impression, and which is, or should be, a facsimile of the natural organs. In no case is the word used in the sense of "casting" and applied to metals. The terms "metallic casts, zinc casts," &c. are carefully avoided, in order that this word may not be associated with any two distinct stages in the regular process of getting up a plate.

The terms MOULD or MATRIX are applied to the cavity into which the metal is poured to form the die. This cavity, which may be made in sand or plaster, or a mixture of both, is formed by the cast, and the process is termed MOULDING. These words are certainly preferable to the circumlocutions in common use "taking the impression in sand," &c. necessary, where the word impression is used, to avoid confusion.

The terms DIE and COUNTER-DIE are applied to the metallic masses between which the plate is swaged: the first, a fac-simile of the *cast*, and by consequence of the natural organs; the second, its reverse, and a fac-simile of the *impression*. The terms "male cast, female cast," apart from the double use of the word "cast" are objectionable, on the score of good taste, as very inelegant: whilst the terms "zinc cast, and lead cast," fail to be significant of the difference between the two dies, whenever zinc is no longer used for the one, or lead for the reverse. That part of the die brought into contact with the plate to be swaged is technically called its FACE or "front:" the opposite side, called with convenient brevity the "back," in the die, receives the blow of the swaging hammer, and in the counter-die rests upon the block or anvil.

This attempt to define the meaning of a few words in constant use, is here offered, not simply as preparatory to the remainder of this essay, but for your general adoption, as calculated to do away, in some degree, with that vague, and confused use of terms so frequently met with. A language is rich in so far as it has a word for every shade of thought, and energetic in proportion as it expresses fully an idea without circumlocution. It is these two qualities that give to the Greek language its superiority, and which are possessed by our own tongue in a marked degree. What is true of language in general, may be said of so much thereof as art and science employ to express their technicalities. Each object or process should have its distinctive term, nor should two words be used where one will suffice to express the idea.

We have to deal at present with the class of so-called "baser" metals, whereby, in the form of dies, we mould the "nobler ones to our uses. Touching the propriety of this time honored classification, it need only be said, that the world is not a whit more unjust to metals than to men. Few words are suggestive of more baseness than the noble metal gold, and in the civilization of the world no metal has done a nobler part than the base one, iron. Neither is "nature's nobleman" always or only found among those whom social or political distinction calls noble.

From this class of baser metals must be selected those which best answer the requirements of the dentist. Fusibility is one important requisite, inasmuch as the practitioner can rarely com-

mand the intense heat necessary for the fusion of sufficient quantities of unalloyed copper or iron. Striking from the list all those infusible at a red-heat, there are eleven remaining. Of these sodium and potassium are inadmissible, because of the impossibility of preserving their metallic form on exposure to the air: mercury, because of its liquid condition: arsenic, because it will volatilize before reaching the fusing point: and Tellurium, because of its variety and consequently costliness, without possessing any compensating advantages. There remain only six, viz :

Tin,	Bismuth,	Zinc,
Cadmium,	Lead,	Antimony ;

to which may perhaps be added copper and iron, as having a very limited use in the composition of certain alloys. Before entering into the relative merits of these six or eight metals, it will be well to inquire more at length into the properties required in metallic dies.

The first essential requisite of a die,* is that it shall possess sufficient **HARDNESS** to force the plate into perfect adaptation, without any material change in its own form. Did the plate come nearly into contact with the whole face of the die, from the first, its yielding under compression would be of less moment, as all parts would yield alike. But such is far from being the actual condition, and the first blows impress their whole force upon the prominent parts of the die. The more marked the irregularities of the mouth, the more essential does this requisite become, especially since the resistance of the plate is increased in proportion to the number and depth of its corrugations. The kind of hardness, in respect of which the different metals and their alloys are to be compared, is not so much the hardness that resists the action of a file or other abrading tool, as that which resists compression under repeated blows. And, as these are not necessarily identical, hence the importance of a classification different from that found in our books, where the metals are graded in the same manner as minerals.

[TO BE CONTINUED.]

* Let it be noticed that this word, wherever used without the prefix, "metallic," designates the die proper, as distinguished from the counter-die.

APPEARANCE OF THE GUMS OF CONSUMPTIVES.

“ More within the range of ordinary observation is the appearance of the gums, where frequently ‘ a mark at the reflected edge of the gums, usually deeper in color than the adjoining surface, and producing a festooned appearance by the accuracy with which it corresponds with the curve of the gingival border ; this mark is, in some patients, a mere streak, in others a margin sometimes more than a line in breadth. In the most decided cases this margin is of a vermillion tint, inclining to lake.’

It is most distinctly marked, as a general rule, around the incisor teeth, but frequently it is apparent around the molars. Its obvious direction is somewhat influenced by the shape of the mouth. Among 21 consumptive *men*, the tinted line was evident in 20 ; — in both jaws in 16 ; — of the rest in the upper jaw alone in two, — and in the same number upon the lower jaw. In one patient thus examined it was absent. In 21 phthisical *women*, there were 8 without margin, yet having signs of advanced phthisis ; 11 had both jaws marked, and in the remaining 2 the lower jaw alone was marked. Of both classes, 7 males and 7 females were only in the first stage — 6 males in the second — 8 males and 14 females in the third. Its early appearance is afterwards alluded to. Dr. Thompson thinks that its absence in cases of otherwise well pronounced phthisis, may be regarded as a favorable indication as to the susceptibility of improvement, and the presumed duration of the disease. A comparison of the occurrence of this symptom and that of clubbed fingers is derived from tables of 38 men examined—of these 23 had their fingers more or less clubbed, and all in whom this was obvious had the margin—10 had the margin but not clubbed fingers. In the same number of women 22 had clubbed fingers, of which 21 had the margin and in one it was absent—in 10 the margin existed without the clubbed fingers. When once established, Dr. Thompson thinks it is permanent. We cannot enter into an explanation of this phenomenon ; to such as feel interested in it we must refer to the book* itself.

* Clinical Lectures on Pulmonary Consumption, by T. Thompson, M. D.

'1st. That the absence of the streak in men affected with inconclusive symptoms of consumption may incline you to a favorable interpretation of any such suspicious looking indications—but that in women rather less weight is to be attributed to this negative sign.

'2d. That the presence of the sign in women is almost conclusive evidence of the existence of the tubercular element in the blood.

'3d. When in either sex it coincides with a pulse not materially altered in frequency by change from the sitting to the standing posture, the presence of phthisis may with high probability be assumed, even before having recourse to auscultation."—*Ohio Med. and Sur. Journal*.

From the American Journal of Dental Science.

Editors of American Journal of Dental Science:

GENTLEMEN:

I find in your number for April last, an article, (vi,) entitled, "Report on Dental Progress," in which the author, A. M. Leslie, D. D. S., presents views and makes deductions in relation to "Abbey's foil," which are evidently based upon erroneous impressions; with a desire to correct which, I would ask permission to occupy a short space in your Journal.

Dr. Dwinelle appears, (at some previous time,) to have instituted certain comparisons between different makes of foil and sponge gold, and needing a familiar standard, had adopted Abbey's foil. Dr. Leslie objects to the choice, as follows: 'Undoubtedly Dr. Dwinelle is right when he says, 'pure gold is of uniform color, throughout the world,' but he falls into an error in which he will find abundance of company when he gives Abbey's foil *as a standard of color* to test pure gold by throughout the world. This can be shown in various ways; 1st, Abbey's foil used to be, and we

suppose yet is, occasionally *variable in color*; 2d, that peculiar red color it possesses is only superficial; melt a leaf or two of it with the blow-pipe, and you will find it range in color with some of the 'paler foils of the market.' It wears a livery which has been taken by many besides the doctor to indicate its royalty.*** What this coloring matter is, may be difficult to determine, but of one thing be assured, *it is only present when iron is made use of in the process of purification*, and need not be then if the gold is *perfectly washed*.

An *examination* of our foil will convince any one at once that it is *not* of a "peculiar red color." That in color it is deeper than most other foils, I admit, but this arises from no artificial or "superficial" process, or neglect through ignorance or inattention in any part of the primary "process of purification," but is a legitimate result of strictly scientific manipulations, carefully and properly performed, and is offered and claimed to be a natural genuine fine gold color. The writer has, for the last five years, personally performed all that appertains to the refining and melting department in the business of our firm, and can confidently vouch for the fact that the particular process of "washing off," is conducted with a faithful and patient use of such chemical and other means as are known to be best applicable to the purpose of removing introduced or formed in the general process of refining, and for the above mentioned period at least, to his personal knowledge, Abbey's foil has not been "red."

Iron introduced into or permitted to remain, (as the Dr. suggests,) in fine gold, has the effect of coloring it an *unmistakable* red, either entire or in spots, according to the quantity of it present, and this discoloration is more or less visible in all stages of the preparation of the foil, as well in the bar as in the foil. Hence, if Abbey's foil *is* discolored or "red," (as per Dr. Leslie,) the "button" formed from "melting a leaf or two," will partake of the same shade of red. If it is *not* discolored "superficially" or otherwise, but is as I assert, natural and genuine in its color, the "button" will be slightly paler than the foil, perhaps almost imperceptibly so; this latter result I will proceed to explain, and in so doing, will at the same time cover the "objection" of Dr. Leslie, that "Abbey's foil is occasionally variable in color." Fine

gold has the property, (one not generally known,) of becoming slightly deeper or darker in color as it is reduced in thickness, the difference in the shade being rendered more distinct by annealing. Thus the thinnest and thickest foil, (say Nos. 4 and 10,) though made from the same bar and undergoing precisely same treatment in all respects, will differ in color slightly, the thinnest being the deepest or darkest shade. If similar Nos. of Abbey's foil are compared, (say No. 4 with No. 4, No. 5 with No. 5, &c.,) there will be found a uniform agreement in color, though a slight difference in shade may be discovered between the extreme Nos., (4 and 10,) for the reason above given. Were the complete foil and the original bar placed in contrast, the difference in shade would be quite obvious. I trust I have made clear, how our foil may be uniform in its color in one sense, though at the same time "variable" in another sense, and also why the melted "button" is a shade paler than the "leaf or two of foil," of which it is composed.

Dr. Leslie alludes to the great adhesive quality that is exhibited in certain gold foil, even to the extent in some, "that simply the weight of one leaf laid upon another would forever unite them at the points of contact," and remarks further, "It will never be found to possess the deep color of Abbey's foil, as when that is present in sufficient quantity, *it cannot be made to adhere.*"

The doctor, not only laboring under a misapprehension in attributing to Abbey's foil, a "peculiar red color," and also in his explanation of the cause of whatever color it does possess, is again in error, in the idea thrown out here, that no adhesiveness can be found in Abbey's foil, *because* of the deep color. Every ounce of fine gold, (notwithstanding the "deep color,") passing through my hands, (in my capacity before mentioned,) has that adhesive quality of which the doctor speaks, to all the extent that its most ardent advocate would desire, although it is not to be found to an undue extent in our foil as sold. Our business correspondence embraces many of the most prominent dentists in the country, and their almost unanimous experience as centred upon us, together with our own observations, have tended to convince us that great adhesive foil is not adapted to the wants of the dental profession, or at least that portion who use our foil, and we have, consequently, acted upon this conviction, and been well sustained in it. The general tenor of their remarks have been, that in using

the adhesive foil, (and there is no scarcity of it,) the various surfaces of the foil as prepared for filling, become firmly united either before or immediately upon the application of the instrument, so that the effort to pack the filling and break down the angles or corners, is one of great difficulty and generally results in the gold becoming hard and immovable, long before it has been made solid or been adapted to the irregularities or inequalities of the walls of the cavity, and is liable not only to admit the juices of the mouth between the filling and the walls, but is apt eventually to become loose and drop out.

Of course I do not presume to enter into a discussion so entirely within the province of the dental profession, and I only present this brief summary (in my own language,) of the views and experience of the mass of our correspondents, as expressed to us, for the purpose of showing why our foil does not exhibit great adhesiveness. It is probable that its uniform absence in our foil has impressed the doctor with the mistaken idea intimated in the passage last quoted.

WM. R. ABBEY,

Of the firm of Chas. Abbey & Sons.

IRRIGATION OF THE HEAD IN INFANTILE CONVULSIONS.

Dr. A. Lalesque de la Teste has brought forward a means of arresting the attacks of this disease, which he asserts has, in his own practice, been attended with the best results. This consists in the irrigation of the head by cold water, and the following are the directions given by the author for its employment:—The time most likely for the application of this remedy to be followed by success, is immediately upon the disease manifesting itself; the effect to be produced is intimately connected with the existence of a certain degree of sensibility; the longer we delay its use, the more difficult will be the production of the cutaneous impression, and, consequently, the modification of the convulsive movements. The most suitable period, then, for the employment of irrigation, is that of the paroxysm. By its use during the intermissions, reflex movements are, no doubt, produced, but these are of no effect in the next attack, because the convulsive crisis itself remains unchanged. By acting on the contrary, during the paroxysm, we obtain an immense advantage in arresting the disordered move-

ments of the patient, and substituting, by means of their disturbance, movements of a more regular description, and which immediately become voluntary. M. Lalesque does not employ more than four pints of water at a time for these purposes. Where this does not succeed, he has recourse to depletive measures for diminishing the congestion upon which such obstinacy of the malady seems to depend. The repetition of the remedy, if of short duration, he considers as quite safe; too long applied, however, he believes it would be attended with bad effects.—*L'Union Med.*, 19th June, 1855.

NEW OPERATION FOR CLEFT PALATE.

At the session of the French Academy, on the 26th February, 1855, M. Jules Cloquet read a memoir on a new procedure in cases of "abnormal divisions of certain organs, and particularly in those of the *velum palati*." M. Cloquet proposes to render available the well-known contractile property of cicatricial tissues, as shown in the various deformities arising from burns and ulcers, by applying to the divided texture a series of canterizations, commencing at one end of the division, and continuing them throughout its course as rapidly as the wounds, there made, heal and contract, thus gradually obliterating the deficiency. M. Cloquet recounts the difficulties and frequent failure of the old operation by suture, and furnishes the details of six cases of *fissured palate* successfully treated by the new method. The objection to the operation is the slowness of the process—but, on the other hand, there are claimed for it, certainty, simplicity, and readiness of application to the very youngest subjects, while the process of cure is accompanied with no restraint upon the patient, and does not interfere with her ordinary occupation. A cauterizing agent, the platinum-wire, heated reddish-white by an electric-current, is preferred to the hot iron, as being less likely to alarm the young patient, while it has the advantage of any chemical agent, in being more controllable as to the extent of its action. M. Cloquet proposes, in a second paper, to treat of the application of his method to the cure of ruptures of the peritoneum and of the rectovaginal septum, and of certain varieties of fistula.—*Gazette Medicale*.

SLOW POISONING BY COPPER.—Dr. Corrigan reports (*Dublin Hospit. Gaz.*) several cases of poisoning by copper, which are remarkable for the extreme slowness of progress resulting from the gradual introduction of the poison. In many instances it was the result of handling old or dirty copper, on which the carbonate had been formed. It was the carbonate from which the poisoning proceeded, and in this there is an analogy with the salts of lead. He notices a peculiar feature in these cases, viz: an edging of rich purple on the margin of the gums, of the incisor, canine, and bicuspid teeth of both jaws. This purple color corresponds, in situation, precisely with the coloring produced by lead, but the tint of color is so different as to decide at once whether it has proceeded from copper or from lead, for, while the color produced by lead is of a pure blue, that from copper is a well-marked purple, and even, sometimes, a reddish purple.

EDITORIAL.

CORRESPONDENTS, SUBSCRIBERS, EXCHANGES, &c., are requested to direct all Communications relative to the financial or business departments of this Journal, to "SUTTON & RAYNOR, 609 Broadway, N. Y.," and articles for publication, books for review, exchanges, reports of society meetings, and all correspondence belonging to the editorial department, to "EDITOR OF DENTAL RECORDER, 139 Fourth Avenue, N. Y."

"THE DENTAL CONVENTION."

Mr. Editor :—In the published report, on the 4th instant, of the proceedings of the "*American Dental Congress*," so called, there occurs the following paragraph, viz:

"*The leading Dentists of the city participated in the discussions, which were of somewhat a conversational cast.*"

Now, without arrogating to myself the title of one of those who may claim to be "*the leading*" men in the profession here, I may at least feel that, possessing some professional character, and a knowledge of the Dentists who justly occupy the highest rank among us, I may properly contradict the statement above quoted. The best, or "*leading*" Dentists of Philadelphia, I have reason to believe, did not attend the assemblage referred to, and therefore could not participate in the discussions, but, on the contrary, declined all participation in the "*Convention.*" The call for such a "*Congress*," at Philadelphia, we are informed, originated at the meeting of "*The American Society of Dental Surgeons*," at Cincinnati, during the summer of 1854, having for its object the dissolution or dismemberment of that society, and the hope of establishing another upon its ruins. Only seven members of the society attended the Cincinnati meeting, and these naturally thought it quite time to abandon a char-

ter under which so little good and so much harm to the profession had been produced, and which had seen its hopes and its promises dwindle into lamentable insignificance, the sad results of a bad beginning in a "*National Convention*" at New-York, succeeded by an endless chapter of blunders, of undignified quarrels, and gradual dilapidation.

A "*National Congress or Convention*" now, emanating from such a source, and conducted, as might be expected, upon principles such as have been manifested in the history of that society, was not likely to unite or bring together the first or "*leading Dentists*" of our country: it could not do so, and hence it did not. Members of the society itself, among whom are a few gentlemen of high standing professionally and socially, (and these were anxious to see the organization disbanded,) attended the meeting of the *Society* in Philadelphia last week, appointed for the *same time and place as the "Congress,"* and with the expectation of seeing it expire. Some came from a distance with the hope of such a result, but of these, several expressed a determination to have nothing to do with the "*National Congress*"—or the new society it was proposed to form out of its materials.

It is but justice, with a knowledge of these facts, to protest against the deceptive style of the report of the doings of the "*National Congress*"—which assumes to have had the aid, the approbation and the sympathy of the "*leading*" dentists of the United States. I could name six or eight gentlemen, among the first Dentists of New York, who have openly avowed they would have no connection with the "*Convention*." I know that the city of Boston was not represented by its most prominent and respectable Dentists, and it is fair to presume that other cities were no better off, as represented at a self-styled "*National Congress*" of the United States.

The pseudo imitation, apparently, of the medical conventions, gives to this "*Dental Congress*" no enviable aspect, and men with a just sense of professional pride or propriety doubt the good taste or advantages of such distinct public movements, on the part of the Dentists at this period. At any rate, a list of all the names of the gentlemen composing the *convention*, the true purpose for which it convened, and the entire proceedings, should have been given to the public; then the merit or reproach would have rested upon the proper shoulders—and the "*national congress*" would, in print, "*render unto Cæsar the things that are Cæsar's.*"

SURGEON DENTIST.

THE AMERICAN DENTAL CONVENTION.

Mr. Editor:—Your correspondent of the 7th instant appears to have been very much exercised in mind, on discovering that your reporter labored under the belief that such gentlemen as Drs. Elisha Townsend, J. D. White, Daniel Neall, J. Gilliams, Robert Arthur, W. W. Fouche, Hudson S. Burr, T. L. Buckingham, Jas. M. Harris, J. F. B. Flagg, S. L. Mintzer, and many others that could be named, are "*leading Dentists* in this city." He says: "Possessing some professional character, and a knowledge of the Dentists who justly occupy the highest rank among us, I may properly contradict the statement above quoted. The best or '*leading*' Dentists of Philadelphia, I have reason to believe, did not attend the assemblage referred to, and therefore could not participate in the discussions, but, on the contrary, declined all participation in the convention." Notwithstanding this sweeping assertion, it is a remarkable fact that a *very large* portion of the community agree with the reporter, and differ with your correspondent, notwithstanding the fact of his "*possessing some professional character.*" What a pity that that "*professional character*" prevented him from coming among us, and communicating to the *benighted creatures* that he appears to believe he would have found assembled, the result of his experience in practice. How much more praiseworthy and creditable to himself than to pursue the course he has adopted of attacking a movement that has for its object "*the formation of such an association as shall be best fitted to satisfy the requirements of the fraternity,* and give the best direction to its efforts for advancement in all *usefulness and honor.*"

Your correspondent will permit me to correct him on several points. First, The American Society of Dental Surgeons did *not* hold their annual meeting in Cincinnati "*during the Summer of 1854,*" as a number of the members residing in the

Eastern States were not willing to go there, owing to the prevalence of the cholera in that region. A few members of the Society assembled there, but it was an informal meeting, as there were not enough to form a quorum; not the slightest idea, however, was advanced on that occasion with regard to a dissolution of the Society; such a thought had not entered their minds. Second, the call for the *American Dental Convention* emanated from the Dentists of Philadelphia, and other localities, *irrespective* of the existence of the American Society of Dental Surgeons. About the latter part of March of this year, a circular was drawn up addressed to the Dentists in all parts of the United States "to meet in Convention at the city of Philadelphia on Tuesday, the 2d day of August, 1855, at 10 o'clock, for mutual consultation and deliberation upon the measures that may best promote harmony and efficiency of effort in the advancement of the common interests of the profession." This was signed by the gentlemen named above, and others residing in the city and State, numbering in all, sixty. Third, The American Society of Dental Surgeons held their fifteenth annual meeting at Cincinnati on Tuesday, May 8, 1855. At this meeting Prof. Townsend, the President, delivered the opening address, favoring "the *regeneration*, the *rejuvenation* of the Society," not its *dissolution*. On motion, "a committee of three was appointed to take into consideration the suggestions made in the President's address." That committee recommended "that a call be issued by the President of this Society, in accordance with the sixth article of the constitution, to take into consideration the general subject of associations, and the *dissolution* of this Society; said meeting to be held in Philadelphia on the day previous to the holding of the meeting called by a number of the dentists of that city." For further particulars the reader may refer to the Dental News Letter of 1855. Fourth, The American Society of Surgeon Dentists met in this city on the first of this month, and after considerable discussion, concluded to appoint a committee who should hold under consideration the expediency of the rejuvenation or a dissolution of the society, said committee to report at the next annual meeting of the Society, to be held in New York in August, 1856. Without further business, it adjourned that afternoon.

The next morning, August 2, a fair representation of Dentists from the different States, and a large number practising in this city and neighboring localities, met at the Assembly Buildings at 10 A. M., and there organized the "American Dental Convention," not upon the "*ruins*" of the American Society, for that is still in existence, but upon a *broad and liberal basis of its own*. Though this Convention was called and organized independent of the existence of the old Society, yet all its members who were in the city, (with three exceptions only) joined the new and gave it their hearty support.

With regard to the six or eight "first dentists in New York," who held themselves aloof from the convention, and who "could be named" by the correspondent, "possessing some professional character," I can only say that, notwithstanding *his* and *their* absence, all of the members composing the convention derived much benefit from the professional experiences given, new modes of practice offered, and theories suggested; and that the proceedings were characterised by the most perfect harmony and good feeling—each gentleman leaving the meeting impressed by the belief that there were other *Dentists* in the *world* besides *himself*. An eminent dentist of New Orleans, and editor of the Dental Obturator, published in that city, remarked "that one idea alone that he got was worth the pilgrimage from his home." Another, a distinguished practitioner of Louisville, Ky., said to me "that the suggestions from one individual only were more than an equivalent for the expenses of his trip East with his family." Both of these gentlemen are members of the old and new societies. Speaking for myself, money cannot measure the incalculable benefit that this meeting has rendered to me.

The name is not "*Congress*," but *Convention*. If Boston was not represented, that is not, as a necessary consequence, an argument against the usefulness and respectability of the convention. Two eminent dentists of Massachusetts were present, (one of them a member of the old society,) and participated in the deliberations. The cities of New-York, Washington, Georgetown, Cincinnati, Louisville, New Orleans, and the States of New Jersey and Delaware, were represented by some of their *best* practitioners.

In conclusion, the convention was held with open doors. The entire profession

and press had free access, and the latter was at perfect liberty to state the objects of the convention. The proceedings, in a condensed form, have already appeared in some of the daily papers. A full and exact report, with the names of the members of the convention, will be published in the Dental Journal; and possibly it may be found, after a *careful perusal*, that the meeting was gotten up for the sole and simple purpose of more diligently cultivating the *sciences* and extending the usefulness of the *art* of Dentistry.

If the reporter fell into the *egregious error* of supposing that the gentlemen named are "leading dentists," it is hardly fair that the society should be traduced on that account. The difference of opinion between him and the correspondent I leave to them, the profession and the public.

A MEMBER OF THE CONVENTION.

P. S.—A circular will be addressed by the Convention to all the members of the profession in this country and Europe, to meet us in New-York on the first Wednesday of August, 1856.

The above communications appeared in a Philadelphia paper shortly after the adjournment of the Dental Convention. We are at no loss to account for the appearance of so contemptible an attack upon the standing and position of the Dentists of Philadelphia who took part in the proceedings of the Convention. It bears upon its face so strongly the impress of that small, low bred jealousy which has been so great a curse to our profession, so great a clog to its improvement or advancement, so impenetrable a bar to the establishment of anything like a social or fraternal feeling among its members, that we don't wonder at its appearance minus a responsible signature. We feel assured that, had the communication of "Surgeon Dentist" been signed by the writer's name, the public would have compelled him to swallow poisonous doses of his own venom.

We do not know who he is—but from his "peculiar style" we would judge the *position* he claims for himself in the Dental profession is one of assumption on his part—never having been conceded to him by the profession, and we would farther venture to say, that if he has position in the eye of the public, that he has obtained it by inheritance, purchase or puffing. He speaks most contemptuously of those who have done much towards the advancement of the Dental profession and the cultivation of feelings of good will and amity among its members. Showing conclusively that if he is as he modestly claims to be, one of the first Dentists of Philadelphia—that while they have chosen one path, he has assiduously travelled another—and this most likely accounts for the fact that during the meetings of the Dental Convention "Surgeon Dentist" "stood alone in his glory." We cannot but feel that the writer of the article alluded to has most erroneous impressions with regard to his rank, standing, &c., in the Dental profession. Judging from the style of his literary productions, we should assign him a position if not as high as Haman's, at least equal to that deserved by he who "stabs in the dark."

In conclusion, we would add our testimony to that of the Member of the Convention who replies to the article which we have noticed above. We have an extensive acquaintance with members of the profession in Philadelphia, and have opportunities that few will question, of knowing who among them stand prominent. We were so fortunate as to be enabled to attend the meetings of the Convention, and those who stand first and foremost among Dentists in the City of Brotherly Love were most active and useful if not most *forward* in the Convention; If any were absent and missed, we have a strong conviction that "Surgeon Dentist" was not of them.

INSTRUMENTS FOR SPONGE GOLD.—We are glad to notice that the increasing demand for this new class of plugging instruments meets with corresponding industry on the part of the dealers and manufacturers. Messrs. SUTTON & RAYNOR have shown us some finely cut pluggers, patterned after our individual set of instruments, which last we consider to comprise every form of point that will be found necessary in working with the Crystal Gold. See their advertisement.

MY DEAR DOCTOR :—The dentist in the course of his daily practice meets not a few cases that may be called curious if not odd or original. Allow me to give you a note from my appointment book, and ask your comments or explanations, for my own benefit and that of our professional brethren. I give the language as literally as possible.

"Saturday, March 3d.—Had a lady patient, Mrs. S., with the left superior canine requiring a filling. As she says, it was filled ten years ago by Dr D., of Columbus, Miss., and the decay was caused by getting bread between the teeth as hot as ever it could be, and before it could be got out it caused the tooth to crumble away. Thinks the filling would have remained in but for an attack of *throwing up* during a bone fever, and it is her impression that when she threw up so much the plug must have come out. Believes she has noticed before on throwing up, that they would come out, or one would."

D. R.

New-York, September, 1853.

We can only say in reply to the above, that had the lady known that the canine and eye teeth were the same, she would probably have charged the loss of the filling to the jar occasioned by winking. But seriously, what a vast amount of ignorance exists in relation to the performance and permanence of Dental operations. It is not very long since, we were told by a lady that she would never eat molasses candy, lest the fillings in her teeth should come out. We replied, that if she had fillings that would be lost in consequence of such indulgence, that she had better try the experiment at once, for fillings so easily lost were valueless and should be replaced by something more permanent. Impressions of this nature are but the result of careless or unskillful manipulations. Dentists and dental operations are improving daily, and though accidents will occasionally happen to the most skillfully performed operations, the public are beginning to feel that something more should be required to occasion their loss than molasses candy or even emesis.

Who will educate the public?

FOX & HARRIS ON THE TEETH. Lindsay & Blakiston. 1855.

We find on our table a copy of Fox & Harris on the Diseases of the Human Teeth, published by Lindsay & Blakiston, Philadelphia. The edition is the same as the one issued some years since, but as a book of reference the work is of value, and we believe contains the best essays on irregularities of the teeth and their treatment, that have as yet appeared; it is either a strong evidence of Fox's genius or else a great slur upon our much boasted advancement, that the methods of correcting irregularities have improved so little since his day. We consider that portion of the work that treats of these matters to be far more than worth the price of the book.

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DEVOTED TO THE THEORY AND PRACTICE OF

Surgical, Medical and Mechanical Dentistry.

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[No. 10.

KÖLLIKER'S MICROSCOPICAL ANATOMY.

[One vol. 8vo. Published by Lippincott, Grambo & Co., Phila.]

SPECIAL HISTOLOGY. OF THE TEETH.

[CONTINUED FROM PAGE 198.]

With regard to the *formation of the dentine* from the dental cells, it is certain that no other tissue than these cells contributes anything to its development and that they, like those of the enamel membrane, become dentine by the gradual reception of calcareous salts. The dentinal tubules are either the remains of the cavities of the dental cells, whose walls, in the course of ossification, thicken and harden into them, but do not quite close, or they are developed from the elongated and coalesced nuclei of the dental cells whose cavity persists; or finally, they are the result of a process of resorption in the primarily homogeneous dental tissue, analogous to the formation of the Haversian canals, or of those in the cement. Of these three hypotheses, the second would, at first sight, appear the most probable, if we consider that the dentinal tubules may be isolated, with distinct walls, that the dentinal cells are abundantly provided with nuclei, and that certain filiform prolongations of the dental cells which I have noticed (Figs. 9 and 197, Mikr. Anat., II., 2, p. 105), might be regarded as elongated nuclei; but there is one very remarkable fact, *that no trace of any elongation of the nuclei can be discovered by the most careful investigation.* The third hypothesis is indeed conceivable, but in opposition to it, we find that pores and canals exist even in the youngest and softest dentine, when the development of the tooth is at all advanced, and

therefore, that they can hardly be regarded as secondary formations. In favor of the first supposition, on the other hand, it may be said, that it would, if true, indicate a close agreement between dentine and osseous tissue, structures which are in every case nearly allied, inasmuch as the dentinal tubules would be homologous with long and narrow, simple or possibly coalesced, osseous *lacunæ*. Certain objections may be urged, which are not, perhaps, so important as they at first appear. These are, in the first place, that the dentinal canals have special walls, and may be isolated as tubes, which might be regarded as demonstrative evidence that they are developed out of peculiar vesicular structures, either nuclei or cells; and secondly, that upon this supposition, the filamentous appendages to the dentinal cells are not so readily interpreted. But as regards the former, we have recently learnt that the osseous *lacunæ* and *canaliculi* may also be isolated, with special walls which are not those of the original cells, and the same is true of the Haversian canals, whence it would be conceivable that the walls of the dentinal canals also, although originally and genetically not special structures, might eventually become so. Since, again, the processes of the dentinal cells may be nothing else than the still soft part of the cells in which ossification is commencing, this first hypothesis may be regarded as having a certain claim to consideration, the more so as the osseous *lacunæ* in the teeth frequently assume forms resembling those of the dentinal canals, often communicate with them, and, at least in animals, are interposed among them.

To sum up, it may be said, that in any case, the matrix of the dentine proceeds from the cylindrical cells investing the pulp of the tooth, which undergo a greater or less elongation, coalesce and ossify. The dentinal canals either arise from the nuclei of these cells, or are, and this at present appears to me to be more probable, the remains of the cavities of the cells, whose boundaries have undergone a greater consolidation, and therefore correspond with osseous *lacunæ*. The divisions of the canals are explained, if we conceive, either that the dentinal cells divide *longitudinally* from time to time, as I believe I have actually observed, or that a cell coalesces with two of its predecessors. As to the more delicate ramifications, we can only suppose that they are formed by a *secondary process of resorption* in already formed dentine,

like that which must be assumed to occur in the osseous *lacunæ*, to account for the anastomoses of their *canaliculi*, and their communication with Haversian canals; at least, I see no possibility, whatever view we take, of explaining their formation in any other way, without coming into opposition with well-ascertained facts. No such process as the thickening and ossification of dentinal cells accompanied by the formation of pore-canals can be observed, so that the fine lateral branches appear to be entirely of secondary origin.

In the course of the ossification of the dentine, at least in man, we find that the deposition of calcareous salts in the recently-formed, structurally characterized, though only slightly hardened dentine, takes place in such a manner that the whole appears to consist of *isolated globules*. These globules, which are visible not only at later periods, but in the earliest cap of dentine, and are best seen at the edge of the root of a large tooth viewed externally, eventually disappear if development proceed normally, calcareous matter being deposited between them, so that the dentine becomes quite homogeneous and clear; in the opposite case, they persist in greater or less number, and the spaces between them, which are nothing but the interglobular spaces above described, contain unossified dentine.

According to my observations, the development of the *cement* takes place from that portion of the dental sac which lies between the pulp and the enamel organ, and commences, even before the eruption of the teeth, contemporaneously with the formation of their fangs. About this time the dental sac elongates inferiorly, applies itself to the growing fang, yields, from its abundant vascular network, a soft blastema, in which nucleated cells are developed, and then ossification takes place. The cement, therefore, is not formed by the ossification of the sac itself. I met with the first traces of it in newly-born infants, in the form of isolated, elongated, or rounded scales, which were firmly attached to the dentine of the, as yet, very short fang, and looked exactly like the developing osseous substances in the cranial bones; the smallest exhibited distinct osseous *lacunæ* and a faint yellow tinge, but were quite soft and transparent, passing at their edges into a clear cellular blastema; in the larger ones, the margins were similar, but the centre was darker and firmer, and in this way

every stage of transition to actual bone was presented, without any granular deposit of calcareous matter. With the elongation of the fang, new osseous scales of this kind were formed and gradually coalesced from above downwards into a single layer, to which continual additions were made from without, until the whole thickness of the cement was produced.

I am unacquainted with the manner in which the Nasmyth's membrane is produced. No structureless layer exists upon the enamel organ, by the ossification of which it might be supposed to be formed, and therefore I should be inclined to regard it as a calcified, amorphous exudation secreted from the enamel organ immediately after the ossification of the last enamel cells, which glues together and protects the ends of the prisms of the enamel.

If we now, in conclusion, take a general view of the different structures in the teeth and their mutual relations, we perceive that although they agree in certain respects, yet they cannot be brought under one class. *Dentine and cement* are much more closely allied to one another, than to enamel, and should it prove to be correct that the dentinal canals are formed by the coalescence of the cavities of thickened, elongated cells, the dentine will correspond with an osseous tissue, whose matrix is constituted only by the thickened walls of the original cells, and whose *lacunæ* are all directly connected. Cement, or bone and dentine, often have a very close external resemblance to one another, particularly on the one hand, when the latter is traversed by numerous Haversian canals, and as Retzius believes he has observed, contains osseous lacunæ; and, on the other hand, when, in bone, the lacunæ are either greatly elongated, with numerous *canaliculi*, vascular canals also existing; or when with few *lacunæ*, the *canaliculi* are numerous and parallel, like dentinal canals. This much is certain, that the two substances never become exactly alike, and it is probable that their development is always to a certain extent different.

The *enamel* may be best compared with a dentine whose cells are ossified throughout, and which, therefore presents no canals, like that in the outermost layers of fishes' teeth; at least the two substances agree in this, that they are entirely composed of elongated cells without any connecting matrix. When canals occur in the enamel, it acquires a very great similarity to dentine; but

these canals probably have a totally different import to those in the dentine, viz.—that of cavities which proceed from absorption. With the cement, the enamel has, in general, no analogy, though there is a kind of homogeneous cement with an indistinct transverse striation which, at least externally, looks somewhat like enamel, but has hardly, like the latter, arisen from elongated cells. If we consider the nature of the parts from which the various substances are developed, the dentine, formed from the vascular part of the mucous membrane of the mouth, is a *true product of the homologue of the derma (schleimhaut-production)*, the enamel an *epithelial structure*, and the cement an *investing substance*, afforded by the mucous membrane.

§143. The substance of the perfect tooth, though hard, is by no means incapable of molecular change, as its various diseases best show. The functions of the *lacunæ* and their *canaliculi* in the bones are here performed by the dentinal canals with their ramifications, the *lacunæ* and *canaliculi* in the cement, and the fissures between the prisms of the enamel. All these cavities, during life, contain a fluid, derived on the one side, from the vessel of the pulp, on the other, from those of the alveolar *periosteum*, and permit of changes in the substance, though they may be slow. Nothing definite, however, is known about the latter, but from the circumstance that perfect dentine is not colored when an animal is fed with madder (Hunter, Flourens, and others; compare Henle, p. 878), it may be concluded, that they are far less active than in the bones, and perhaps take place in such a manner that the calcareous matters are not at all or only very slowly renewed. The dentine is undoubtedly best provided with fluid supplies, from its being penetrated by very numerous and frequently anastomosing canals. We can as little suppose any regular circulation in it as in the bones; but it may be assumed that a certain movement takes place, proportionate to the amount of the exudative and absorptive processes in the pulp, of the waste in the tooth itself, and of the supply afforded to the enamel and cement and probably given off from the latter tissues externally. Though the *enamel* is not impermeable, it permits of the passage of fluids with difficulty, as is best shown by the circumstance that the nerves of the dental pulp are not affected by acids, so long as the coating of enamel is entire, but readily enough, when,

as in the incisors, the dentine is exposed. The enamel, again, is the hardest dental tissue, possesses scarcely any organic matrix and no constant systems of canals. Nasmyth's membrane, which is attacked with so much difficulty by chemical reagents, is, very probably, still more impenetrable than the enamel itself, and hence these two substances serve admirably to protect the teeth. The *sensibility* of the teeth arises from the nerves of their pulp; they are affected by contact, heat, cold, and chemical agents. Slight mechanical influence can only act by the vibrations which they may communicate to the substance of the tooth and thence to the pulp; it is therefore the more remarkable that the teeth have a certain sense of locality, so that it is possible to distinguish whether they are touched internally or externally, above or below, on the right or on the left side. The sensibility of the teeth is indeed tolerably delicate, especially on the masticating surface, where the smallest foreign bodies, as hairs, grains of sand, &c., are perceived when these surfaces are rubbed against one another; and as regards its acuteness, it is, in disease at least, excessive, which is sufficiently explained by the considerable number of nerves in the pulp and the readiness with which they may be compressed within their hard receptacle.

With age the teeth become denser; the pulp cavity is filled with a kind of irregular dentine and may be totally obliterated, which is, perhaps, the normal cause of their falling out. In certain cases observed by Tomes, the fangs in old age were quite transparent, like horn.

[TO BE CONTINUED.]

CASES OF ALVEOLAR ABSCESS.

In the January number of the Recorder, we promised to furnish our readers with the history of some cases of Alveolar Abscess, illustrative of the plan of treatment advocated by us some months before. The course of treatment alluded to was founded upon the belief, that by far the greatest proportion of these abscesses were the result of decomposed or decomposing substances contained in the pulp cavity or nerve canal of the tooth. That

this decomposition gave rise to matters which must somewhere find vent, and that when no exit could be had from the crown of the tooth, they forced their way through the foramen at the extremity of the fang, causing more or less inflammation of the periosteum of the tooth at that point; that at this stage of the disease, an effort was made by nature to repel and confine the discharging substances to the cavity of the tooth, and that where the amount of decomposition was trifling, this effort was often successful; the periosteum becoming thickened and indurated, and thus closing effectually the foramen of the root, but that when this attempt at a *natural cure* failed, the membrane surrounding the fang became the sac of the abscess—that this eventually opened, and a sinus being formed through the alveolar process and gum, the discharge was thus made, continuing for an indefinite period, increasing and diminishing from time to time, as exciting or soothing influences were brought to bear upon the affected organ and its surrounding tissues.

The course of treatment advocated was, first—removal of all decomposed substances contained in the pulp cavity of the tooth; second—to arrest effectually the process of decomposition both in the nerve cavity and beyond it. The first to be accomplished by the use of such instruments as could be readily passed into the canal to its extremity, and by repeated and thorough washing with water (by means of a syringe). The second object to be attained by the use of creosote. This substance is well known as an anti-septic; it will prevent the decomposition of animal substances; it will do more, it will arrest decomposition after it has commenced, and still more, for it will often restore animal matter which has become slightly decomposed or “tainted.” Meat held for a few minutes in a weak solution of creosote and water can be hung up in the air till dried and is in effect cured or smoked—at least so far as its preservation is concerned.

It is a matter of daily notice that teeth with dead nerves in them turn dark; it is simply because their decomposed contents have entered the tubules forming the dentine; to remove all of this discolored bone would greatly weaken the tooth. Fortunately, it is seldom necessary. The removal of comparatively a small portion will, aided by the yellow tinge caused by the subsequent filling with gold, generally prove sufficient to restore

the natural appearance or so near it as to escape notice. Still there yet remains a large amount of dentine, the tubes of which contain decomposed matter; to leave this so and fill the tooth and fang would only insure a darker shade to the tooth. In the majority of cases a very decided change of color would be noticed after a few weeks had elapsed. We know of no way of obviating this difficulty except by treating the contents of the dental tubes with creosote.

The tubes cannot be emptied—we cannot purge them of their disgusting and baneful contents, but we can leave the decomposed substances in their resting-place in a pure and inert condition, so that they will neither injure nor discolor the tooth. This end we accomplish by means of creosote and with more certainty than with any other agent with which we are acquainted. So much for preface. We are now prepared to make some practical illustrations.

CASE I. — March 16th, 1854. — Miss M——, aged 16. Constitution feeble, with scrofulous taint. Teeth very large—crowded—incisors over-lapping. The whole denture composed of teeth of very soft character, and at this time very badly decayed. The right superior lateral incisor has the nerve exposed. The adjoining central contains the remains of a dead nerve—large abscess at the extremity of the fang, and crown of tooth very much discolored. The left lateral incisor very deeply decayed upon both approximal surfaces.

Made an application of arsenic and creosote to the exposed nerve of lateral incisor. Cleaned nerve cavity of right central, and filled the fang with floss silk, moistened with creosote.

17th.—Removed nerve from the lateral, arrested the hemorrhage, and filled the fang with gold foil. Renewed the application of creosote in nerve cavity of the central.

18th.—Filled the crown cavity of the lateral, and again renewed the application to the central. Abscess does not seem to have changed, though the exhalations from the nerve cavity are of a much improved character, giving but a slight ammoniacal taint to the silk floss with which it had been filled.

Between this time and the 22d, the application was renewed several times, and the nerve of the left central incisor having been

exposed too much to be filled successfully by capping, (we attempted it but failed,) we destroyed the nerve and filled the root with gold. At this date, finding no taint of anything but creosote upon the floss with which the nerve cavity of the right central was filled, it was removed, the canal thoroughly washed out and dried, and then filled with gold. The abscess discharging less but still remaining.

24th.—Filled crown cavity of right central. Abscess still open.

25th.—Filled a crown cavity in the left central, but not the one opening into the pulp chamber. We omitted to state that great trouble was caused by the hemorrhage from the nerve vessels of this tooth; it seemed almost impossible to arrest it. We filled it with floss saturated with camphor, and allowed it to remain twenty-four hours; upon removing the filling the hemorrhage recommenced, but by injecting cold water it was at length controlled, as we supposed, and the root filled with gold. We did not see the patient for some weeks after the 25th, but learned from members of the family that she had been quite ill—confined to her bed, and that her face had been very much swollen.

April 18th.—Patient again made her appearance. Stated that one of her teeth was quite loose—it had caused her much suffering, and her face had swollen very much—that these unpleasant symptoms commenced the evening of the 25th, but had eventually disappeared after a copious discharge of matter, leaving the tooth quite sore and loose. Upon examination found that an abscess had opened immediately over the left central incisor, and that this was the tooth that had caused the trouble. The abscess connected with the right central had disappeared entirely; its former position being marked by a small spot somewhat redder than the tissue around it. This tooth was firm and entirely free from pain or soreness, there being no unpleasant sensations connected with it.

From this state of things we judged that the hemorrhage from the nerve vessels of the left incisor had recommenced after the fang was filled, and probably was caused by the jar and pressure of filling the crown cavity, as there was no soreness or apparent trouble until after this was filled. We cannot but consider this case as a most convincing one, so far as the treatment advocated is concerned. It not only was entirely healed by the applications,

but all this, i. e. the actual healing and closing up of the abscess was accomplished while there was a great amount of local irritation and disease connected with the adjoining tooth, and sufficient as the result proved to establish an abscess over that tooth. There could be no connection between the two teeth that could have caused the discharge from the right central to come out over the left one. Had there been any chance of a connection, the new opening would not have occurred, nor the old one have closed. It may be of interest to know that the operation performed upon the right lateral incisor was entirely successful.

June 2d.—Finished the operation upon the left central, by filling the cavity leading to canal of the tooth. There is a slight opening over the root of this tooth—no perceptible discharge—no soreness—tooth quite firm.

Sept., 1855.—No signs of abscess over either of the teeth. Patient states that she has had trouble once since we saw her last—does not know which tooth; there was considerable soreness, and one of the teeth felt loose, but no discharge or swelling.

CASE II.—Feb., 1852.—This patient was a young man aged 21, in good health, florid complexion, active habits. Called while in great suffering from a superior right central incisor. Had been troubled with it for two or three days, but not so severely or constantly as during the night previous. The tooth was firm in the socket, but pressure upon it caused intense pain that seemed to affect the whole face. Directed leeches to be applied. The next morning he again made his appearance; the leeches had relieved him temporarily, and the disease had apparently gained strength by its resting-spell, for all of the symptoms were aggravated, and the upper lip was beginning to enlarge. Being convinced that suppuration of the nerve was about to take place, we directed warm and emollient applications to be made; these directions were not attended to, and after a good deal of suffering, an abscess opened above the tooth, and the soreness continuing after the disappearance of the more aggravating symptoms, we were requested to operate. This we commenced by drilling through the posterior surface of the tooth into the nerve cavity. The tooth had been filed and filled upon both approximal surfaces, but the filed spaces having closed up, we concluded it would hardly be safe to file them at this time as the jarring of the file would be likely to interfere with

the ultimate success of the operation by increasing the inflammation at the root of the tooth.

After removing the remains of the nerve from this tooth, we applied the creosote in the manner described. This application was renewed several times, and as soon as the soreness at the root of the tooth disappeared, we filled the nerve cavity with very finely cut strips of No. 30 gold foil, and then filled the crown cavity with No. 4. Considerable pain was felt upon forcing the first two or three pieces of gold into the extremity of the fang, but as more gold was packed in the uneasiness diminished, and when the operation was finished the tooth felt perfectly free from pain. Shortly after this the abscess healed, but at the end of a year it again appeared, and continued to give more or less trouble for some months. Finally it vanished, and again appeared in the latter part of 1854. Early in 1855 the patient felt one morning what he supposed to be a bristle from his tooth pricking his upper lip and gum; upon examining it with a glass he discovered something bright. With a little trouble this was pulled out and proved to be one of the small strips of No. 30, used in filling the fang of the tooth.

Here then was a failure—the abscess was not cured. It was not, however, a failure of the medical but of the mechanical treatment. It was an accident that could not have been foreseen, and was doubtless owing to an unusually large opening at the extremity of the fang. We have understood that since the removal of the piece of gold no trouble has been experienced.

CASE III.—Miss L.—consulted us early in January, 1855, relative to a left superior incisor. The tooth had been filled some years before. Arsenic had been used to obtund the sensibility of the bone previous to excavating. After the whole operation was completed, the tooth remained sore for a long time; finally very severe pain, and inflammation was followed by death of nerve, abscess, &c.

When we saw the patient the tooth was very much discolored, and as the lady's teeth were large, regular, and finely-shaped, this change in color detracted most materially from her beauty. There was no opening through the alveolus above, or in the neighborhood of the tooth, nor had there been any for nearly two years. There was however, a hard and apparently bony tumor as large

round as a ten cent piece, and elevated at its centre about one-fourth of an inch beyond the level of the gum. This tumor was at times quite painful, and the tooth often felt quite loose. The greatest annoyance to the patient was the protrusion of the lip and the discoloration of the tooth. The two combined producing a decidedly unpleasant effect upon what would otherwise have been a very pretty and interesting face.

Upon examination the pulp cavity was found to be filled with a dark green semi-liquid, and horribly offensive matter. This was as thoroughly removed as possible, and the tooth repeatedly washed out with tepid water and dried with floss cotton. After which, the usual application of creosote and floss silk was allowed to remain twenty-four hours, and then, after washing out the canal, applications were renewed. This treatment was persisted in for about ten days, when all trace of the odor of decomposition had disappeared, and the tumor at the extremity of the fang had become diminished by about one-half. The fang was now filled, and at the end of twenty-four hours no unpleasant symptoms having appeared, the operation was completed by filling the crown cavity. Removing the decomposed contents of the nerve cavity had sensibly restored the color of the tooth, but after cutting away a thin layer of bone forming the inner wall of the nerve cavity, the change was more perceptible. The color was still farther restored by filling the crown cavity with gold. We did not see our patient again for several weeks, and then had the pleasure of knowing that the tumor had entirely disappeared. There had been no unpleasant symptoms connected with the tooth.—The color remained the same as when filled, and it would require a very close examination to detect any difference between this tooth and its fellows.

[TO BE CONTINUED.]

NEW SOURCE OF ALCOHOL.—FORMATION FROM COAL GAS.—This consists, mainly, of bicarburetted hydrogen, forming what is called olefiant gas. It has been found, that by agitating it with sulphuric acid and metallic mercury, the gas is absorbed, and upon adding water, and distilling the mixture, alcohol is obtained—the true ethylic alcohol, or spirit of wine.

METALLIC DIES.

AN ESSAY READ BEFORE THE SOCIETY OF ASSOCIATED ALUMNI OF DENTAL COLLEGES,

MARCH 1ST, 1855. BY PROF. P. H. AUSTEN.

[CONTINUED FROM PAGE 203.]

To those of you who may desire to benefit yourselves and your profession, by a series of experiments upon this point, allow me to suggest briefly the simple apparatus necessary. First, a small ingot mould to secure uniformity of size and shape in the pieces of metal experimented upon. Second, a steel pointed punch with a circular face, $\frac{1}{8}$ or $\frac{1}{4}$ inch in diameter, fixed over a firm metallic base upon which the ingots rest, and capable of moderate vertical motion. Third, a 5 lbs. hammer, arranged either in an upright slide, or on the end of a movable arm, so as to fall from a given height upon the head of the punch. Lastly, a micrometer screw, capable of measuring thousands of an inch, with which to determine the depth of the indentation made by the punch. The hardness of any metal varies inversely as the depth of the indentation. With this simple rule, a scale may be readily formed.—Conjecture is thus replaced by certainty—a substitution of utmost importance in any department of science.

A point which demands notice here, is the proper relative hardness of the die and the counter-die. The same metal is often used for both dies and, in some instances, the harder metal for the counter-die. A little reflection will show that there should always be a decided difference in favor of the die. The faces of the two dies before swaging, are in contact at all points. But, separate the two in a vertical direction, and this uniformity is no longer preserved. The horizontal portions corresponding with the floor of the palate and the top of the alveolar ridge will be most widely separated; the sloping palatine surfaces less so, in proportion to their abruptness, and the outer vertical sides of the alveolus, not at all. Now, as the plate to be swaged has a very appreciable thickness, one or the other die must yield in those parts which approach too closely, before the dies can be brought together again with a uniform thickness of plate between. Of course all such partial yielding is, just so far, a distortion, and if it takes place in the die, which it will be remembered is the fac-simile of

the mouth, it must of necessity affect the accuracy of the plate ; hence, to avoid this danger, the die should be decidedly the harder of the two, that the greater part if not all of the compression may take place in the softer counter-die.

An argument urged in favor of using a metal harder than lead or tin for the counter-die, is, that it lessens the liability of the die to "rock" under the force of an occasional one-sided stroke of the swaging hammer. The operator who does not know how to avoid ever making such a stroke, has a simple lesson in dental mechanics yet to learn. It is this same unskillfulness that causes many to bury one die too deeply into the other—a practice fraught with much annoyance, without a single redeeming advantage.

The second requisite in a metallic die, is FUSIBILITY at a moderate temperature. As before remarked, comparatively few practitioners can have ready access to means sufficient to fuse metals (in 5 pound masses) more refractory than zinc. And there are hundreds whose labors would be materially lightened, if furnished with an alloy equally hard as zinc, which would yield to the heat of the spirit lamp. The city dentist, surrounded with every appliance, and having at his command the means of making cast iron dies if necessary, often fails to appreciate the slender opportunities of his village brother, whose movable laboratory bears to his own some such relation as a medicine chest does to an apothecarium. To relieve the embarrassing difficulties of the one, is a greater boon to the profession than to add to the ingenious contrivances of the other.

But a second argument in favor of metals, that fuse at a low temperature, is the lessened amount of shrinkage. The lower the melting point, *ceteris paribus*, the less a die will shrink. All metals, below their point of fusion, are subject to the general law of expansion by heat and contraction by cold. True, the rate of expansion varies, but with every allowance for such variation, the metal that "sets" at 770°, and has to lose 700 degrees of heat to reach the mean temperature of the air, will shrink much more than one that cools through only 200 degrees. What shall we then say of copper, shrinking through 1900 degrees, and brass through 1800 ; will their increase of hardness compensate for their great contraction ? We think not.

As regards the relative fusibility of the two dies, it is much

safer that the one last poured should be the more fusible ; though, with care, metals of equal fusibility may be used, or the one last made might be a few degrees less fusible than the first. In any such case, the first die should be cool, and carefully coated on its face with whiting or lamp smoke. There is not, however, we think, any necessity for incurring such risk. Some operators, by the dipping process, or otherwise make their counter-die first ; others again, by the process of moulding, first cast the die. Either may, by reference to the table subsequently to be given, select two metals or alloys, such that, whilst in both cases the counter-die shall be the softer, in each the metal first used shall be the more infusible.

The third important-requisite in a metallic die is non-contraction upon cooling so far as this is attainable. It is the yielding softness of the mucous membrane that permits the work of the most skillful to be retained firmly in place. It is this same accommodating quality that also favors the unskillful, whereby the mouth in time adjusts itself to a piece, which has not in the first place been properly adjusted to it. The extent of this adaptability is well shown in the fact, that artificial dentures made entirely of porcelain, have sometimes been worn, notwithstanding the distortion which the furnace necessarily produces, and for which it is quite impossible to make accurate allowance. Now, since no die, except steel, which is, of course, impracticable, possesses a degree of hardness resisting all compression under the hammer ; since also none is free from some contraction upon cooling, it is evident that were the surface of the mouth as hard as metal, it would be absolutely impossible to bring a plate into contact at all points by the process of swaging. It is your duty not to abuse that facility of adaptation ; nor should you ever rest satisfied with work that is barely able to retain itself in the mouth.

I may seem to many, in the three "requisites" above enumerated, to indulge in unnecessary refinement. One will say he has never used any other metals than zinc and lead, and he has never found the shrinkage of the zinc a source of inaccuracy. Another has always used his two dies of the same metal, and yet his plates always fit. A third, who never uses any material harder than tin, pewter, or type metal, is uniformly successful. One of three inferences from such statements must be true ; either the operators

have a limited experience; or they fail to distinguish between a firm and unstable adaptation; or they are deficient in candor. The profession abounds in men who speak thus confidently of their own particular methods. Gather them in convention and let each speak of the merits of his own plan, and you might well think that dental science had reached its *ultima thule* of perfection; but hear them comment each upon the plans of the rest, and you then might wonder if there had really been any progress made since the days of Desirabode. "This remedy never fails to restore the most broken constitution, in a very short time, to a condition of perfect, healthful vigor." Such is the language of the charlatan, who would have the world think that one panacea will suffice for all the ills that flesh is heir to. Such, virtually, is the spirit of every one who assumes for any process a too universal application, and who, by denying the necessity for improvement, would check the progress of scientific discovery.

[TO BE CONTINUED.]

ON THE USE OF AMALGAM FOR FILLING TEETH.

BY ELISHA TOWNSEND.

It is somehow held to be more creditable to learn what one has not known, than to unlearn what he has erroneously believed. Blank ignorance shows a clearer account than posted mistakes, though it may not foot up any better at settlement day.

During his professional novitiate, the student is held innocent of that which he is faithfully pursuing, but has not yet attained; and the same gentleness of construction is allowed to cover the unknown, which lies beyond the acquisitions of the expert; but how embarrassing it is to a practitioner, with a dozen or a score of years of experience endorsing his diploma, to back square out of a mistake which he has been publicly pledged for!

Intending to make no excuse for my own tardiness in recanting a professional error, lest I should be betrayed into a justification of it, and inviting my brethren in the same category with myself to come up to the mark with as little reserve, I propose

to give my present views upon the much vexed question of the propriety of the use of amalgams for filling teeth.

I have myself been so far ruled and over-ruled by authority in this matter, that I cannot honestly allow my own little influence to be responsible for its share, however small that may be, in the perpetuation of an injurious prejudice.

I cannot charge myself with either *great* rashness or *great* obstinacy in this matter, but on a full survey of all the points of principle and propriety, I can no longer withhold from the profession those clear conclusions which have now for some time governed my own practice, and must influence me until they shall be corrected by farther light and knowledge.

Without any more explanations, I put myself into the witness-box, and will be ready after the simplest delivery of my testimony *in chief*, for the *cross examination*, using both terms, however, in the sense which the lawyers give them, and neither allowing nor expecting any punning upon the words which imply punishment.

In 1834, I filled the posterior and buccal surface of an inferior dens sapientia for a professional friend, with the amalgam of mercury and silver. It was considered impossible, from its position and frailty, to fill it with anything else, and we supposed it might be retained for a year or two. It is now, though discolored, as good for a masticating organ as ever it was. The adjoining molar, which was apparently sound at that time, has since decayed and been removed. About the same time I filled a tooth for a clerical gentleman, which, though but a shell, he deemed very important. Of the success of this I gave him but little hope. I have seen it within three months, and it is as good as when filled. After a few more fillings, (all intended as experimental and to be carefully watched,) I abandoned the practice, not from a failure, so far as I was able to see in any of the operations I had performed, but because I was told that it was doing much harm, and that the good done by saving a few shells of teeth, even if they were saved, was more than counterbalanced by the injury inflicted upon the profession and the public by the quacks, who were authorized to use it by our example. This argument, used by men for whom in every way I had, and still have, the highest respect, and who stood in the foremost rank of the pro-

fession, made me willing to refrain from its use, and from that time until September, 1854, I never did use it.

My attention was then called to it by a professional friend in New-York, who told me he had been making a series of experiments which had fully convinced him of its value, and also of its freedom from all the objections which had been urged against it by its opposers. These objections were—

1st. That it became black, and discolored the teeth in which it was placed. 2d. That it had produced salivation or ptyalism. 3d. That it contracted in hardening, and therefore did not fill the cavity, allowing moisture to surround it and reproduce decay.

The first of these objections did exist, but is entirely removed by the present mode of preparing it, which consists, mainly, in adding a large portion of pure tin, and then washing the compound thoroughly with absolute alcohol. This, if carefully done, will insure its remaining almost as white as frosted silver.

The second objection, though answered with as much certainty, may not be so easy of conclusive proof. I have not been able to find any one, on whose judgment I could rely, and who really knew what ptyalism was, say he had met with a case of sure and marked character. Some had met with great tumefaction of the gums, looseness of the teeth, ulceration, &c., but we know that all these conditions are present in cases where no mercury has been employed. Stopping a carious tooth with a pledget of cotton, where there is disposition to alveolar abscess, will produce great swelling. Carelessness and want of cleanliness will allow accumulations of tartar, and a consequent loosening of the teeth, accompanied by a fetor of the breath, equal in disagreeableness to the odor of ptyalism, and not very readily distinguishable from it in all cases.

I know of one case which was reported as one of decided salivation, and confirmed also by two physicians, which was said to come from four large amalgam fillings; the mouth was very filthy, and no care had been taken by the patient to cleanse it. She was told it was so much diseased that she must lose all her teeth, perhaps her life. This filthy mouth was cleaned, the gums properly treated, and entirely restored to health, without even removing the fillings on whose devoted heads the anathema had been poured. The mercury of the amalgam was, therefore, clear-

ly not answerable for the symptoms in the case, and I have not been able to find any other that would better warrant the charge against the material, at least no case or fact which requires us to rule it out of practice on this apprehension.

3dly. It contracted in hardening, &c. This, by actual and careful experiment, it is proven not to do. It is well known that all substances or compounds which harden by the process of crystallization, rather expand than diminish their bulk. Now an amalgam of silver and mercury hardens by this process, and therefore cannot contract. That it does not contract is well proved, besides, by all experience of its use in dental cavities.

But, it will be urged, you endorse all the quacks in their empiricism by your example. Not at all; for it will be found to require as nice skill in the preparation of the cavity, as great care in the preparation of the material, and as much dexterity of manipulation in using it as are required in the employment of gold for the purpose. I would ask, does a physician, who gives calomel or arsenic judiciously, as he knows how to do from his teachings and experience, endorse the indiscriminate use of the same agents in the hands of the quack? Is he in any way responsible? I think not.

Now, it is well known to all dentists of large practice, that cases are constantly coming into their hands where the cavity of decay is so situated as to be impossible to be certain that the particles of gold are placed in such apposition as effectually to exclude moisture and the chemical agents which produce caries, and in such cases, if what we claim for amalgam be true, it should take the place of gold; it can be packed closely and firmly, filling every part of the cavity without endangering the texture of the thinnest shell. If this can be done, as with this material we know it has been by very poor operators, how much more valuable does it become in the hands of the expert and careful manipulator? In a future paper I will give some cases in which I think it better than gold, with directions for the proper preparation of the material, and the mode of its employment and application. Now, I am only concerned to put in a plea for a material that I deem to have been unjustly put under ban by those who were unacquainted with any good there might be in it, and who, for the most part, saw it only in cases where, if the same

operator had used gold or tin, the result would have been more disastrous to the teeth.

The following case is to the point: Twelve years since a lady came to me for professional advice and aid, and among the things she wished me to do, was to remove two amalgam fillings from her front incisors, put in three years before; the enamel was very thin, and slightly cracked; the fillings showed black through it. I told her I thought it would be impossible to get it out without breaking the teeth, as it was their principal support. These teeth I have watched, at intervals of six to eight months, ever since, until last spring, when the lady died of disease of the lungs. The teeth were serviceable to her to the last, and in appearance were as good as when I first saw them. I venture the assertion, that had they been filled with gold fifteen years since, even by the most expert operator, they would not, as they did, have served her through life.

I mention this as a case which clearly sustains all the points for which I offer it. It may not, perhaps, have been warrantable to fill a front tooth with a preparation which would become so black; but the object of filling teeth is to save them the longest time possible, with as little detriment to their appearance as possible; if this can be better done by a plastic material, than one which requires heavy pressure for consolidation, then the plastic material is the better; and if that material can be relieved of its objectionable feature of discoloring, we have another agent in our service, where it is believed to be preferable.

Neither do I fear, as some do, that it will render dentistry so easy that there will be laxity of moral feeling in the prosecution of our duty—for, if properly done, no time is saved to the dentist, no care lessened of manipulation in the proper preparation of the cavity, and a great deal of care and skill are necessary to pack and work the amalgam to a proper surface. I do not think, either, that it ever can or will supersede the use of gold foil, where gold can be used; but there are cases occurring in the practice of every dentist, in which, if he does his best duty to his patient, he is bound to use it if he knows how.

Contenting myself, for the present, with the avowal rather than with the description, or ample examination of opinions stated, I wait another opportunity for presenting the results of experience

and its teachings to my brethren in the profession, and I would be glad, in the mean time, to learn from them whatever they know, for and against the practice.

P. S.—Since writing the above, I have been made aware of the necessity of giving some directions now, as to the proper preparation of the amalgam for insertion; as I find some have been experimenting without being aware of the requirements to ensure success. Recipe—4 parts of pure silver; 5 parts pure tin. The silver to be melted in a crucible, and when partially cooled, the melted tin slowly added, carefully shaking the crucible while pouring in the tin; a black flux is then thrown in, and the whole is reheated: then poured into the ingot. I am indebted for this method of preparation, to Dr. Wm. M. Hunter, of Cincinnati. It should be filed with a sharp keen file, which is kept for the purpose, and used for no other. A good magnet should then be passed through it to remove any portions of steel that may have separated from the file. It is then to be bottled ready for use. After the tooth is perfectly prepared for filling, stuff it with cotton to exclude moisture, that you may more readily make the cavity perfectly dry when you have the composition ready, and lose no time, as it is needful it should be used as soon as possible after mixing. To mix it, take in the palm of the hand a globule of pure mercury, upon this put as much filings as you think will be sufficient to fill the cavity, rub these well together with the finger until they have thoroughly united, you then have a paste which is very soft and plastic, put it into a mortar, either glass or wedgewood, and put to it a teaspoonful of absolute alcohol; by triturating this you will soon find the alcohol become blackened, pour it off and add more, and so on, until the compound is thoroughly clean, then remove it from the mortar, dry it, and in a piece of chamois leather, or a twilled cloth, clear it of the superfluous mercury, by twisting in the fingers or squeezing in a vice. You then have a cake of white metal, which can be broken into pieces and be made to adhere to each other so as to form a uniform solid mass. In placing it in the cavity it should be used in small portions, taking care that the lower portions, or those in the bottom of the cavity, are firmly pressed down; in this way the cavity may be entirely filled, so as to leave it projecting a little beyond the surface. The burnisher may then be used to

compress and smooth it, and alternately scraping the superfluous portions and burnishing until it has begun to harden, then it may be left until the next day, with direction to the patient not to use the side of the mouth until the next day; after twenty-four hours the filling may be filed and stoned and polished, as is usual with gold or tin fillings.

For packing the compound, I have found the point of a small file, such as is used for finishing plugs, the best instrument, and by softening the opposite end and thinning it, so as to make a sort of spatula of it, you have two instruments in one. I prefer to use it dry, and to keep the mouth and cavity dry while packing it, as I do all kinds of filling; though I have been sometimes very successful even where the saliva reached it before finishing. Now I do not say or think, that the method I have proposed, is the only, or it may be the best way, but for the present it is my method of using it, and I throw out these hints in the hope that the many energetic and scientific workers in our profession, will endeavor its improvement until it shall be all we desire. It is well known that several centuries since, the Chinese had a method of filling teeth with some material which was of the texture and color of the enamel, but unfortunately the art is lost. Who knows but that some American dentist entering this field of the unknown, may recover this great secret, and thereby improve his art and bless mankind.

EDITORIAL.

Our readers will doubtless be surprised at the tenor of an article copied from the News Letter, written by the present President of the American Society of Dental Surgeons, and strongly advocating the use of amalgam for filling teeth. They will not, however, be surprised that a course so inconsistent on his part should be bolstered up by equally inconsistent argument.

Twenty-two years ago, Dr. Townsend filled some cavities in teeth with an amalgam of mercury and silver, "all intended as experimental fillings, and to be carefully watched." He abandoned its use, however, not from any failure that he could see, but because he was told that the good he could do with it would be more than counterbalanced by the quacks who would be authorized to use it by his example.

With equal propriety, Dr. T. might have declined the use of gold, and we doubt very much that the result would have been any different, for there are still quacks, and they use both gold and amalgam. However this may be, Dr. T. discountenanced the use of amalgams for twenty years, when his attention was again called to the subject, by a friend who assured him of its freedom from "*all the objections* which had been urged against it by its opposers." The objections were,

"1st. That it became black and discolored the teeth.

"2d. That it produced salivation or ptyalism.

"3d. That it contracted in hardening, and therefore did not fill the cavity, allowing moisture to surround it and re-produce decay."

These three then constitute, according to Dr. Townsend, "*all the objections which had been urged against it by its opposers.*" We have looked over these objections very carefully, but do not find recorded among them *the* objection, which, when urged by men "who stood in the foremost rank of the Profession," induced Dr. T. to discountenance the use of amalgam for twenty years.

However, we have three objections mentioned, and even "small favors are thankfully received." The first, he states, "is entirely removed by the present mode of preparing it," and after describing the process, he adds: "This, if carefully done, will ensure its remaining almost as white as frosted silver."

"The second objection, though answered with as much certainty, may not be so easy of conclusive proof." We consider the last clause of this sentence to be more than justified by the arguments offered, and the case appended by way of illustration.

The third objection relates to the shrinking while hardening. He states that "actual and careful experiment proves that it does not shrink or contract." He further says, "that all substances or compounds which harden by the process of crystallization rather expand than diminish their bulk. Now an amalgam of mercury and quicksilver hardens by this process, and therefore *cannot* contract." This is an error. The hardening of an amalgam of silver and mercury is no more a crystallizing process than is the hardening or solidifying of mercury by itself, and Dr. Townsend, by consulting his authorities, will find his memory refreshed by there learning that mercury in undergoing this process, loses about one-seventh of its bulk.

After these statements, Dr. T. proceeds as follows: "But, it will be urged, you endorse all the quacks in their empiricism by your example." To this he replies, "Not at all," and then endeavors to enforce conviction upon his readers by using precisely the same arguments that were in vogue twenty years ago, and by which he refused to be convinced.

Dr. Townsend evidently believes that amalgam can be more readily applied than gold. This we presume is a generally acknowledged fact. He tells us that all objections to its use are entirely overcome. That careful preparation "will insure its remaining almost as white as frosted silver." Such a color being nearer to that of the teeth than gold, should of course be preferred. He cites cases tending to prove that in the merest shells of teeth it will last many years longer than gold. Of course, in teeth possessed of ordinary strength, measured by the same rule, the new amalgam fillings will last for "many generations."

To sum up—he believes that its color is superior to that of gold, and can be relied upon for durability. That it can be more readily applied than gold. That it will

last longer, is equally innocent, and can be used successfully where gold cannot; and yet believing all of this, he continues to use gold for filling teeth. Was there ever such a display of inconsistency?

Using amalgam with success, not having made a failure, "so far as he was able to see," he abandons and discourages its use for a period of twenty years, out of deference to opinions and arguments, which he asserts to be visionary, believing that it is not inferior to gold in any respect, and that it possesses advantages which gold does not possess, he still confesses that his "main stay" is gold, and his "forlorn hope" is amalgam. He does not think that "it ever can or will supersede the use of gold foil where gold can be used."

Our author follows his argument by a formulæ, as he finds that "some have been experimenting without being aware of the requirements to insure success," and by way of acquainting them with these requirements, he gives a recipe which may be followed to the very letter, and yet produce amalgams that will harden in two hours or two weeks. He says it i. e. the alloy "should be filed with a sharp keen file." Now at this present time of writing we are not prepared to appreciate the utility of the double-barreled adjective with which the Dr. qualifies his file, but for the benefit of those who may make use of the recipe, we would state that if a *fine* file is used, a much longer time will be required for the amalgam to harden, than if the filings are made with a coarser instrument. The hardening process is also measurably controlled by the amount of mercury allowed to remain in the amalgam.

And now to conclude an article already longer than it was intended. When we were in Philadelphia this summer, we were shown some fillings by Dr. Hunter, which had been worn in the mouth two years; they were certainly prepossessing in appearance, and were evidently doing good service. We were not made acquainted with the nature of the material, but supposed it to be amalgam of some kind. It was considered in the light of something to be made public eventually. It may be that Dr. Townsend has made the secret known. If so, he has earned the thanks of the Profession. The facts he has furnished us are valuable, but as for the arguments and deductions, we regret for his sake that we cannot award them equal praise. It is no more than justice to Dr. Hunter to state that he expressed his intention of making his improvement known as soon as his experience and that of his friends would warrant a cordial endorsement of its virtues. We presume ere long he will be heard from in this connection.

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PRACTICAL OBSERVATIONS ON THE USE OF ETHER AND CHLOROFORM.

From the first introduction of these agents for the purpose of anæsthesia, there has been much difference of opinion in the profession in regard to the extent of the applicability of each. At the outset, sulphuric ether was used with the utmost freedom in all quarters, by surgeons, accoucheurs, and dentists; and when chloroform was introduced, it was supposed, by many physicians, that we had now reached perfection in anæsthesia. Some, indeed, expressed doubts on the subject, and were disposed to use these agents, especially chloroform, with much caution; and some were entirely opposed to the use of either. The great majority however, of those who used them, did so with little caution, and with no fears of any unfavorable results. But one case after another occurred, in which the use of chloroform produced even death. These cases occasioned so much alarm that the use, not only of chloroform, but of ether also, was for a time, largely relinquished. Ether has, however, been coming into favor more and more with the profession in this country, and at the present time, it is used to a much greater extent than chloroform.

It is claimed for ether, by its advocates, that it has never caused death, and I believe that this claim is well-founded. But, on the other hand, it is claimed for chloroform, that, with proper precautions, it is really as safe as ether. And it is used constantly by some, both in surgery and midwifery, without, as they say, any untoward effects, and certainly without any immediately fatal ones. In Great Britain it is almost universally preferred to ether.

It is only by a strict and extensive observation of the effects of these agents, that we can determine, satisfactorily, the applicability of each, and arrive at the rules which should govern us in their use. I propose simply to offer some suggestions which may serve to guide us in such an observation.

I remark, at the outset, that the common experience of the profession has taught us, that any agent that acts decidedly upon the system is attended with some degree of danger, and requires caution in its administration. This is especially true if its action be rapid, as well as decided. But, in the midst of the rejoicing of medical men over the introduction of the anæsthetic agents, this established truth seems to have been forgotten by many of them. They administered them as if they were exceptions to this general truth. The use of them has been quite commonly careless and indiscriminate. There has even been a disregard of the fact, that idiosyncrasies exist in many individuals, rendering them peculiarly susceptible to some agents. Many of the deaths from chloroform have undoubtedly resulted from such a susceptibility in relation to this agent.

It is obvious, that there is more need of caution in the use of chloroform than in that of ether, from the greater rapidity with which it induces anæsthesia. The transition of the system from entire sensibility to perfect insensibility in less than a minute, cannot be otherwise than hazardous. It is not at all wonderful that so rapid and great a change in the nervous system should occasionally result in death. It is just what we ought to expect.— And therefore, we should be extremely cautious in regard to the rapidity of the effect which we produce. Especially should we be cautious in this respect in all cases where the anæsthesia is induced for the first time.

It may be that this rapidity of effect is the only reason that chloroform is not as safe as ether. You cannot in any way induce anæsthesia by ether as quickly as you can by chloroform. It is comparatively a long process. And the difference between a transition of less than a minute, and that which occupies several minutes, may be the difference between life and death.

If ether and chloroform differed from each other *essentially* in regard to safety in their use, we should expect to find an essential difference in their effects. But the difference in the nature

of their effects is but slight. The ether has a more marked stage of excitement preceding the quiet state of anæsthesia, and it causes generally more turgescence and discoloration of the face. The most observable difference is not in the nature of the effects, but in the time required to produce them.

Some of the recent experience of the profession in the use of chloroform seems to show that the rapidity of its influence is the only source of its danger. Since so many deaths have arisen from its use, more care has been exercised on this point by those who have adhered to it, and the experience that has been gathered in this way is very satisfactory. I will cite but a single specimen of the experience referred to. M. Mounier, the chief medical officer of a hospital in Constantinople, states that in several thousand cases of the wounded brought there, he had used chloroform, from the slightest to the most serious, and without any ill effects in any case. His mode of administration secures a slow production of anæsthesia. It is this:—A paper cone is made with a base wide enough to embrace both mouth and nostrils, the apex being cut across so as to allow of the free ingress of air during inspiration. Here is inserted a little charpie, on which are dropped 20 or 30 drops of chloroform. The patient is placed horizontally, his eyes are bandaged, and the strictest silence is observed. The pulse, respiration, and duration of inhalation are carefully watched by an intelligent assistant. The cone is alternately brought for a few seconds in contact with the face and removed; and in proportion as the anæsthesia becomes declared, the apparatus is held nearer and longer to the face; the chloroform is renewed in the cone as many times as is needed.—The sensibility of the patient is judged of by pinching and interrogating him, and his silence is the signal for commencing the operation.

I would not say that it is absolutely settled that the danger attending the use of chloroform is owing solely to the cause mentioned. This, in view of the considerations presented, we may say, is probably true; but further observation is needed to settle this point definitely.

Another fact in the use of anæsthetics, though it has often been noticed, has not been sufficiently regarded in practice. I refer to the fact that pain is antagonistic to their influence, just as it is to

the influence of opium. It is from this fact that, with one or two exceptions, all the deaths from chloroform have occurred in the practice of surgery and dentistry. In midwifery, the suffering condition of the system prevents the full and sudden effect from taking place, and thus obviates the danger of arresting the action of the respiratory muscles and the heart. We occasionally see in the same case the contrast between the influence of the chloroform when there is suffering, and its influence when there is none. I call to mind a case in which a man was put into complete insensibility, by the same amount that only made him easy and happy, with the full possession of his senses, when administered while he was suffering severe pain. Great amounts are sometimes used with safety in cases of extreme suffering. I once used eight ounces of chloroform in less than twelve hours, in one case of labor.

It is clear, from the facts and considerations presented, that, in all cases where there is no suffering the anæsthetic being used prospectively as a preventive of suffering from an operation to be performed, it is essential to safety to bring the system gradually under its influence. Even in the use of ether, this is the proper course; for there may be some idiosyncrasy which renders it inapplicable, perhaps dangerous, and this can obviously be better discovered under a gradual administration of the agent.—But in the case of chloroform, all experience demonstrates the necessity of this course to be imperative.

In the hospital in this city, and in private practice also, we make use of a mixture of chloroform and ether, one part of the former to four of the latter. I am satisfied this acts more kindly than ether does alone. The action of the ether is so modified by the chloroform that the stage of excitement preceding the full anæsthesia is generally quite slight, instead of being troublesome as it often is when ether only is used.

I am decidedly of the opinion that, with the present experience of the profession, we ought to use either ether alone or the mixture referred to, in all those cases where the object is to prevent rather than relieve suffering. Chloroform may be used in those cases in which suffering is actually present; but we are hardly warranted as yet in using it as a preventive. If, by further experience, it be satisfactorily determined, as I think it will be, that

its danger to life depends wholly upon the rapidity of its influence, we shall then be justified in using it in all cases, taking care to bring the patient slowly under its influence, and watching its effect especially upon the respiration. But we must wait patiently for the observation of the profession in regard to this point.

In the gradual induction of anæsthesia, it is a matter of some importance that the patient should be kept perfectly quiet.—Noise and disturbance in the room interfere manifestly with the kindly influence of either chloroform or ether. The process of inducing anæsthesia needs to be an uninterrupted, as well as a gradual process, in order to be perfectly satisfactory.

Another circumstance of some importance, is the adaptation of the amount used to each individual case. Some are much more readily affected than others. In some, too, the effect lasts longer than in others. From these and other differences, the management of the anæsthetic needs to be varied much in different individuals. And there is a sort of tact acquired by experience in this adaptation to individual cases.

There is another point in the use of anæsthetic agents to which sufficient attention has not been directed. I refer to the occasional production of various injurious effects. Agents of such power cannot act favorably in all cases and under all circumstances. If used indiscriminately, they must often do harm, and sometimes undoubtedly lasting injury is inflicted. When this is the case, relief from pain is purchased at too dear a cost.

We are not, therefore, merely to inquire what cautions are necessary to prevent death from occurring in the use of anæsthetic agents; but we are to search dilligently for all those circumstances that cause them to produce any evil effects, of whatever kind they may be. I have not a doubt, that in the practice of midwifery, valuable as these agents are, they have often produced effects more or less disastrous from their indiscriminate use. And the same may be said of surgery, though not to the same extent. For the state of suffering in the process of labor is complicated often with affections, general or local, that must sometimes be inconsistent with the use of anæsthetic agents—a complication that exists much less frequently in surgical cases. The attention of the profession has been too exclusively devoted to the question as to danger to life in their use; and other effects, injurious,

though not fatal, have been too much left out of view. We need accurate and extensive observation to determine precisely the circumstances which should govern us in their administration, especially in the practice of midwifery. Till the results of such observation be gathered, we should proceed with much caution, preferring always to let the patient suffer pain, rather than incur any risk of doing her essential injury.

I may remark in the general, that there has been much of careless, indiscriminating observation in regard to the actual effects of anæsthetic agents. The great want in regard to these, in common with all other remedial agents, is accurate observation. There is no one thing in which the profession are so deficient as in this. There is among us, as well as in the world around us, enough of thinking, of reasoning, of speculating, but not enough of accurate and intelligent seeing. Let every one scan thoroughly his own experience in the use of the agents under consideration, and let this experience be recorded and compared extensively, and then shall we learn the true value of each of them, and the various circumstances that should govern and limit their administration. With such a recorded experience, I have no doubt that these agents will be found to be among our most valuable remedies for disease. Their range of usefulness will be vastly widened.—The surgeon and the accoucheur will not claim them as peculiarly their own, but the physician will use them in his daily practice for the relief of suffering, and for the promotion of the effects of other remedies.—*N. Y. Medical Times.*

In the *Western Lancet*, we find an account of the case of a gentleman who, while eating his dinner, disengaged and swallowed a gold dental plate, having a clasp on the left side. The plate supported a full set of heavy incisors for the upper jaw, four in number. The patient took cathartic pills, without any effect; but in two days and eighteen hours from the date of the accident, he passed the plate per anus, with but little pain, surrounded and impacted in a mass of hardened fæces.

KÖLLIKER'S MICROSCOPICAL ANATOMY.

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SPECIAL HISTOLOGY. OF THE TEETH.

[CONTINUED FROM PAGE 220.]

The following remarks may be made upon the *pathology* of the teeth. Permanent teeth which have fallen out are sometimes replaced by a third dentition; but it must not be forgotten that the milk teeth occasionally remain beyond their time, and care must be taken not to confound a second tooth, late in its eruption, with a third. Teeth which have been extracted may be replaced (in fifteen months a canine tooth which had been extracted from the upper jaw was perfectly firm again). An abnormal development of the teeth takes place particularly in the *ovarium*, but also elsewhere. *Fractures* of the teeth may be re-united when they occur within the *alveoli*, by imperfect dentine or cement. Regeneration of the worn down parts takes place only in animals (Rodents, *e. g.*) in which the teeth constantly grow. *Hypertrophy* of the cement (the so-called *extosis*), deposits of dentine in the walls of the pulp cavity and ossification of the pulp itself, are exceedingly common, and result from chronic inflammation of the *periosteum* and pulp.* A partial disappearance of the fang is

[Wedl in his recent work (Grundzuge der path. Histol.) has added some very interesting observations to our knowledge of the structural changes occurring in the different parts of teeth. In *hypertrophy* of the cement he observed the canaliculi dilated, so as to form Haversian canals, and agrees with Kölliker (*vid. § 140 supra*) as to the frequency of the hypertrophy of the entire cement in old teeth. In partial hypertrophies of the cement he detected numerous dentinal globules, bounded by irregular fissures, and on their external border many bone-corpuscles. These latter were separated from each other by a yellowish intercorpuscular substance, and in many instances by peculiar sinuous cavities, which traversed the lamellæ of the osseous substance.

The *deposits* of dentine in the walls of the pulp-cavity, the "osteo-dentine" of Owen, he regards as mainly originating from the dentinal globules, which to him are protein-bodies. This osteo-dentine partakes in some instances more of the nature of bone, than of dentine, but consists generally of a central substance and of tubules radiating from it; it frequently appears to be formed of concentric layers. The central substance Wedl describes as consisting either of hyaline dentinal globules, of a grayish, amorphous mass, or of distinct bone-corpuscles of varying shapes, separated by spaces resembling Haversian canals. The newly-formed tubules run

not uncommon. *Necrosis* of the teeth takes place when the periosteum has been stripped off, or the pulp has died. The teeth become rough and dark, even black, and finally fall out. The nature and causes of *dental caries* are doubtful. It attacks living and false teeth (Tomes), and always begins on the exterior, from Nasmyth's membrane (Ficinus), whence the fluids of the mouth have been supposed to have considerable influence upon it; it does not follow, however, that one living tooth may not be more disposed to it than another, being rendered less capable of resistance either by its chemical composition, or by the mode of its nutrition. Caries, however, is assuredly not a simple solution of the salts by the oral fluids, but a solution accompanied by a putrefactive decomposition of the organic elements of the tooth, which becomes covered with infusoria and fungi; in fact, according to Ficinus's observations, the latter growths would appear to play the important part, inasmuch as the decay of the teeth usually commences in those localities in which undisturbed opportunity is given to these organisms to develop, as in the cracks and pits of the enamel, in the depressions of the molar teeth, in the clefts between the teeth, but not where the dentine is otherwise exposed, as on the masticating surface, in filed places, &c. The usual course of caries is, that the discolored spots of the cuticle of the enamel, covered with living and growing organisms (infusorial animalcules, similar to a *Vibrio*, which Ficinus calls *Denticola*, mucedinous fungi (Erdl, Klenke, Tomes), similar to those which are found upon the tongue, and which Ficinus wrongly refers to the *Denticolæ*) first loose their calcareous salts, and then break up into angular, cellular pieces, as if they had been treated with hydrochloric acid. The decay then penetrates through the enamel to the dentine, always first softening it, so that it yields not more than ten per cent. of ash (Ficinus), and then decomposing it. The dentine is more affected by this process than the enamel, its canal first becoming filled with the

from this central mass towards the dentine of the tooth, with the canals of which they communicate. Sometimes they are intersected in their course by the presence of many dentinal globules, or by irregular lacunæ. In all instances of these formations, that he has examined, the dentinal globules existed in great abundance. The dark color of the globules, wherever met with, Wedl is disposed to attribute to their retrogressive metamorphosis, whilst he regards the dark color of the interglobular spaces as dependant on a deposit of brown pigment in their interior.—DaC.

fluids proceeding from its decomposition, which may reach the pulp and give rise to pain, unless, as Tomes found, the dentinal canals in the neighboring healthy portions become obliterated by deposits, or the pulp is protected by new masses of dentine developed in the cavity* (Ficinus, Tomes). Eventually a brownish deposit takes place in the tubules and then the intermediate substance becomes completely broken up. In this manner the process of decomposition extends further and further, until at last the crown collapses, the root also becoming dissolved and finally falling out.

In jaundice, the teeth not uncommonly assume a yellow color, which is occasionally almost as intense as in the skin, and in asphyxiated persons they are said frequently to be red; both facts being explicable only by the supposition that the coloring matter of the bile and of the blood transudes into the dentinal tubuli. In *rachitis* the teeth remain unaffected. In the *mucus upon the teeth*, an abundant growth of the mucedinous fungi which have been mentioned, is always to be met with in a finely granular *matrix*, surrounding mucus- or epithelium-corpuscles; besides which we find the infusoria of carious teeth and the earthy deposits of the oral fluids. If this mucus accumulates, it hardens and forms the *tartar of the teeth*, which consists, according to Berzelius, of earthy phosphates 79.0, mucus 12.5, ptyalin 1.0, organic matter, soluble in hydrochloric acid, 7.5.

The best *mode of examination* of the teeth is by making fine sections and preparations softened in hydrochloric acid. To obtain good specimens of the former it is necessary to employ only young and fresh teeth, as the enamel otherwise readily breaks off. A longitudinal or transverse slice should be first taken off with a fine saw, and may then be rubbed down, first upon a coarser and then upon a finer stone, as thin as possible; the section should then be cleaned and polished between two glass plates, until its surface is as smooth and shining as it can be

* ["It is worthy of mention, also, that in the teeth of the hare, the sow, and the stag, especially in the molars, stony masses are constantly found. They are semi-transparent, for the most part oval and rounded bodies, situated in the axis of the dental pulp, towards its apex, in irregular rows, never extending the whole length of the dental pulp, but only to a greater or less distance from the coronal extremity." Raschkow, Meletemata, &c., cited and translated in Nasmyth's "Researches" (1889), p. 139.—[Tas.]

made, and finally washed with ether in order to remove any impurities it may have contracted. When well polished and dried, all the dentinal canals and *lacunæ* will be filled with air, and the section may be preserved without further addition under a glass plate, cemented by some thick and quickly solidifying varnish. Such polished sections are preferable to any others, which, on account of their irregular surface, require to be covered with different fluids, as Canada balsam, oil of turpentine, &c., in order to be examined by high magnifying powers. It almost always happens, in fact, that some portion of these fluids enters the dentinal tubules, which then become quite clear and indistinct and invisible in their finer ramifications. A very viscid varnish alone is of any service. In preparing these sections of the teeth, the slices may also be first affixed to pieces of glass with Canada balsam, and then be rubbed down with a file and polished, on one side first, and then by warming the balsam and turning the section round, upon the other. When such a section has been washed with ether and dried, it is as good as one prepared with water only. Two sections made perpendicularly to one another through the middle of the crown and fang of a tooth, from before backwards, and from right to left, are sufficient to exhibit the most important features of the teeth; but sections ought also to be prepared, showing the surface of the pulp cavity and that of the enamel; and also different oblique and transverse sections through the commencement of the dentinal canals of the fangs, to exhibit the anastomoses of their branches. The *dental cartilage* is easily demonstrable by maceration in hydrochloric acid, a process which requires a longer or shorter time according to the concentration of the acid and its more or less frequent renewal, taking 3-4 days in strong acid and in dilute, from 5-8. If it be desired to soften the tooth so much that the tubules may be isolated, it must be left for about eight days in concentrated hydrochloric acid; in thin sections of dental cartilage 12-24 hours' treatment with sulphuric and hydrochloric acid, and a few hours with dilute solutions of caustic potassa and soda, are sufficient for this purpose. It is very instructive also to macerate thin sections of teeth in acid and to examine them upon glass plates at intervals, until they entirely break up. The enamel prisms are readily isolated in developing enamel; the transverse lines are seen best when

the object is moistened with hydrochloric acid, and the transverse sections of the prisms are seen exceedingly well in longitudinal sections, in some layers. The early development may be studied in embryos of two, three or four months with the simple microscope and in transverse sections of parts hardened in spirit; the structure of the dental sac, and the development of the dental tissues in fetuses of four, five, and six months, and in new-born infants, both in fresh subjects and, if it be desired to recognise the relations of the enamel organ, in spirit preparations also, in which its structure is very well retained. The pulp of mature teeth is obtained by breaking them in a vice, and their nerves are best seen on the addition of dilute solution of caustic soda.

[TO BE CONTINUED.]

NOTE ON THE INDUCTION OF SLEEP AND ANÆSTHESIA BY COMPRESSION OF THE CAROTIDS.

BY ALEXANDER FLEMING, M.D., PROFESSOR OF MATERIA MEDICA, QUEEN'S COLLEGE, CORK.

While preparing a lecture on the mode of operation of narcotic medicines, I thought of trying the effect of compressing the carotid arteries on the functions of the brain. I requested a friend to make the first experiment on my own person. He compressed the vessels at the upper part of the neck, with the effect of causing immediately deep sleep. This experiment has been frequently repeated on myself with success, and I have made several cautious but successful trials on others. It is sometimes difficult to catch the vessels accurately, but once fairly under the finger, the effect is immediate and decided.

There is felt a soft humming in the ears, a sense of tingling steals over the body, and, in a few seconds, complete unconsciousness and insensibility supervene, and continue so long as the pressure is maintained. On its removal, there is confusion of thought, with return of the tingling sensation, and in a few seconds consciousness is restored. The operation pales the face slightly, but the pulse is little if at all affected. In profound sleep the breathing is stertorous, but otherwise free. The inspirations are deeper. The mind dreams with much activity, and a few seconds appear as hours, from the number and rapid succession of thoughts pas-

sing through the brain. The experiments have never caused nausea, sickness, or other unpleasant symptoms, except, in two or three instances, languor. The period of profound sleep, in my experiments, has seldom exceeded fifteen seconds, and never half a minute.

The best mode of operating is to place the thumb of each hand under the angle of the lower jaw, and, feeling the artery, to press backwards, and obstruct the circulation through it. The recumbent position is the best, and the head of the patient should lie a little forward to relax the skin. There should be no pressure on the windpipe.

The internal jugular vein must be more or less compressed at the same time with the carotid artery; and it may be thought that the phenomenon is due, wholly or in part, to the obstructed return of blood from the head. I am satisfied that the compression of the artery, and not of the vein, is the cause. The effect is most decided and rapid when the arterial pulsation is distinctly controlled by the finger, and the face loses somewhat of its color; and, on the other hand, is manifestly postponed and rendered imperfect when the compression causes congestion of the countenance.

This mode of inducing anæsthesia is quick and certain. The effects diminish immediately when the arteries are relieved from pressure, and are not liable to increase, as happens sometimes with chloroform and ether, after the patient has ceased to respire the vapors. So far as my experience goes, it has shown no tendency to cause faintness; and usually, after its employment, no unpleasant feeling whatever remains.

I think it may be found useful as a remedial agent in certain headaches, tetanus, asthma, and other spasmodic diseases, and to prevent pain in such small operations as the extraction of a tooth or the opening of an abscess. Whether the compression can be continued *with safety* sufficiently long to make it available in larger operations, has to be ascertained. But whatever be the practical value of this observation, it is at least interesting as a physiological fact, and may be the means of throwing light on the causes of ordinary, medicinal, and hypnotic sleep, and coma. Some facts encourage the supposition that the circulation of the brain is languid in ordinary slumber, and the etymology of the word carotid shows the ancient belief in the dependence of deep

sleep on some interference with the passage of the blood through these vessels ; and it is not an unreasonable conjecture, that hypnotic sleep may be sometimes caused or promoted by the contracted muscles and constrained position of the neck compressing the carotid arteries, and diminishing the supply of blood to and pressure on the brain.—*British and Foreign Medico-Chirurgical Journal*.

METALLIC DIES.

AN ESSAY READ BEFORE THE SOCIETY OF ASSOCIATED ALUMNI OF DENTAL COLLEGES,
MARCH 1ST, 1855. BY PROF. P. H. AUSTEN.

[CONTINUED FROM PAGE 230.]

Now there are many cases in which moderate shrinkage will not appreciably affect the accuracy of adaptation. Contraction takes place uniformly throughout the whole mass, and its amount between any two points is proportioned to the distance. The greatest distance practically met with is between the extremities of a lower plate, and consequently the most contraction. Hence the frequency with which in such cases, especially where the investing membrane is hard, the hazardous, uncertain method of bending with the fingers is resorted to. But in an upper plate, where the arch is not too deep or wide, and the mucous membrane not too firm, the softness of this membrane will adapt it to any inaccuracy of the plate from under a zinc die, whether caused by contraction or compression. Unfortunately for the practitioner of one idea, there are some very deeply arched mouths, some with the mucous membrane nearly as hard as bone, and some in which there is an annoying combination of hardness in one part with softness in another.

It has been suggested among the remedies for this source of inaccuracy, that the thickness of the varnish on the cast may be made to compensate. A moment's reflection must show the error of such a calculation. On the outside of the alveolar ridge this compensation might take place, but on the inner sides of the opposite alveoli, the varnish unites with the shrinkage, to lessen the space between them, whilst the distance between the plane

of the ridge and the floor of the palate remains the same as in the unvarnished cast. The same remarks will apply equally to another suggestion, namely, where sand is used, "to so loosen the cast as slightly to enlarge the mould." Now, though varnish as a corrective of shrinkage is worthless, yet, when properly applied, it does no harm, except when the counter-die is taken at once from the cast. But this latter suggestion is more than worthless, it is very reprehensible. This is an important point and worthy of more than passing notice.

Every motion communicated to the cast in the act of moulding, beyond the slight jarring sufficient to detach the sand from its face, impairs the accuracy of the die. The enlargement is never uniform, but is greater around the ridge, thus practically deepening the arch and giving to the plate that "rocking" motion, so frequent a source of annoyance. It is practised by many, that the cast may be readily withdrawn. But if moulding in sand involves any such necessity, 'twere much better to return to the older practice, which takes the die at once from the cast. The custom of some dentists to trust their casting to the hands of a brass founder, is reprehensible, not only because of the great contraction of brass or copper, where these metals are used, but also because such men scarcely ever can be induced to take that care, the necessity for which they cannot appreciate, and which indeed, in their every day work, would be wholly uncalled for. Every cast should be so shaped as to part freely from its mould, without the least appreciable motion being given in the act of loosening. Peculiar conformations of the alveolus must be met by methods, which it would be irrelevant here to describe, but no difficulties of shape can justify the enlargement of one part of the mould in order to withdraw the cast from another. Of those whose habit it is to remove the cast from the sand between the thumb and forefinger, it is sufficient to say we trust their sin is one of ignorance and not choice.

One other popular error, relative to the contraction of the die, demands notice. It is said the metal must not be poured too hot into the mould, lest there be an unnecessary shrinkage. True, the metal should not be too hot, but for a different reason, to wit: the danger of spoiling the die by the too rapid evolution of vapor where the sand is used, without any previous drying. So far as

accuracy in other respects is concerned, the hot poured metal will give the most correct die, because by reason of its greater fluidity, more searching. This is evident upon comparing the smooth surface of a cold poured die with the granulated surface of one poured hot, in which the minutest grain has left its impression. As regards shrinkage, there is not, as respects the *face* of the die, the slightest difference, though on the back, it is very perceptible in the depth of the central depression. What are the changes that take place during the cooling of the metal?

Ice melts at 32° Fahrenheit, and water solidifies at the same temperature. So of all metals it may be said their points of solidification and liquefaction are identical. Selecting zinc for illustration—it cannot be poured at a lower temperature than 773°, nor at however higher degree poured, can it solidify until it reaches that point. Now, in every liquid mass, contraction by cold is shown by subsidence of the fluid, not by any change of relation to the lower parts of the receiving vessel. The mercury in the thermometer bulb will constantly fill it, whether at zero or boiling point, but any decrease of temperature below its freezing point, will cause the mercury to become smaller than the interior of the bulb. The molten zinc will be in uniform contact with every part of its matrix, and will be level on its upper part until solidification takes place, beginning at the outer surfaces in contact with the sand and the air. The die then assumes its fixed relation, and at 773° is an exact duplicate of the cast, supposing the process of moulding to have been correctly performed. But as the concentric layers cool, they continue, being yet fluid, to subside, leaving that depression characteristic of the zinc die, and which is deepest at the point last solidifying. The heat conducting power of the metal keeps it at very nearly the same temperature, till it has become solid throughout; after which the change upon the face of the die begins, and the whole mass becomes smaller by contracting upon itself through 700°, till it reaches the average temperature of the laboratory. The shape of the back of the die may vary, as the upper layer of the metal cools more or less rapidly. If suddenly chilled, a level will cover the central depression, or the refuse of the ladle may hide it. A more gradual cooling gives a dished appearance; but if by covering the casting instantly with a large piece of ignited charcoal,

this surface-cooling is altogether prevented ; it will then be perfectly level. Whether the back of the die be level or concave, or with an abrupt depression in its centre, is a matter of no moment to one who practises the proper method of swaging. The counter-die of lead or tin presents no such irregularities on the back, because, cooling less gradually, the upper surface subsides together, and the whole mass solidifies almost instantly. The same difference is observable in melting as in solidifying ; zinc melting gradually, and lead more suddenly.

In the selection then of a metal or alloy for the die, with a view to secure the least degree of shrinkage, regard must be had first to the rate of contraction ; secondly, to the melting point. There is no need to search for an alloy, which like ice, expands in the act of solidifying, as antimony is supposed to do, and in a less degree, type metal. Of this last named alloy, it is almost universally said that it fills the sharp outlines of the delicate matrix of the type founder, by virtue of its expansive property. But some recent researches of Mr. Charles Tomlinson, satisfactorily show that the addition of the antimony does not render the contractile lead expansive, but only lessens its rate of contraction. More than this we cannot hope to secure by any addition of antimony to lead, tin or zinc. But, both for type founder and the dentist, this is quite sufficient. The sharply defined face of the type is brought out by a peculiar upward jerk of the matrix, at the instant of pouring, and the antimony is useful in lessening the tendency of lead to cool suddenly, thus allowing time for it to search the finest lines of the mould. This last property of the antimony, next to the increased hardness it imparts, is most useful to the type founder ; its contraction upon cooling being uniform in all types, would give no trouble, if in moderate degree. What is done in the foundry by the quick upward motion of the hand, is accomplished in the dentist's laboratory by the mere weight of the metal. The small quantity of metal, in the first case, renders some such expedient necessary ; but the molten metal of the die, in the first place, being in so much larger mass, retains its fluidity long enough to search every irregularity of the mould ; in the second place, its face is kept in close contact with the matrix, while passing from the liquid to the solid state, by the pressure of the three or four pounds of superincumbent metal ;

lastly, as has been previously shown, all contraction prior to solidification, affects the back of the die and not its face.

A fourth and last property, which will be briefly noticed as requisite in a metallic die is COHESION. Metals deficient in this are brittle and will not stand the number and force of blows sufficient to swage a gold or silver plate. Many dies, however, possessing a sufficient cohesive force, will not stand the sledge hammer violence, which some operators think it necessary to employ. This undue violence, together with a faulty shape of the die itself, cause many to class zinc among those metals too brittle for use; whereas a skillful manipulator has no occasion even to break a properly shaped zinc die. Antimony and bismuth are alone unfit for use, and if added in too large proportion, will render alloys too brittle. This effect must be carefully remembered in our assays to find among the alloys one which to greatest hardness shall unite fusibility and least contractility; for these valuable properties are of course worthless if its brittleness prevents their being made available.

We pass now to the investigation of the physical properties of each of the six metals—tin, cadmium, bismuth, lead, zinc and antimony, attempting to assign to each its relative value, and its proper application in the dental laboratory. Inseparable from such an investigation, is the subject of metallic alloys, generally of much more value than the pure metals themselves, and well worth a series of careful and accurate experiments.

[TO BE CONTINUED.]

TREATMENT OF NEURALGIA BY CHLOROFORM. — Dr. Hardy, of Dublin, suggests the local employment of the combined vapors of chloroform and warm water, as an excellent remedy in neuralgia. The application may be made to a limb by means of an air-tight case, and should be continued for a considerable length of time.

CRYSTALLIZED GOLD.

When Dr. Watts first attempted to prepare a form of Sponge or Crystalline Gold for filling teeth, he experienced great difficulty from his ignorance of the details of Dentistry. If he had been thoroughly acquainted with the modes of manipulation by which unexceptionable gold plugs were produced in the mouth, and with the varied influences by which their integrity may be subsequently endangered or destroyed, the Profession and himself would have been saved a great deal of time, trouble, expense and mortification. Being, however, professionally and practically a Chemist, he was obliged to appeal to Dentists for their judgment and counsel. With this view he submitted a form of Prepared Gold to a few of the best operators with whom he was at that time acquainted, and upon whose judgment he thought he could most safely rely.

To these persons it was a new and extraordinary thing. Its singular qualities—the peculiar mode of using it—and the results attained with it, were equally remarkable. They were “astonished,” “delighted;” in the heat of enthusiasm, reported it “the greatest discovery of the age,” and in letters to the Dr., it was landed without limit, and set down as already a “perfect” thing. It was further said, that slight experience would enable comparatively unskillful persons to accomplish better work with it than could be produced with foil in the hands of operators of tried skill and large experience; that its use required less time than foil, while it could hardly be said to require *skill* at all. All this occurred before the Gold had been offered for sale, or any directions published for its use.

The truth was, that Crystal Gold at this period should have been subjected to rigid, critical trials and tests, particularly the “test of time,” that Dr. W. might have had an opportunity to remedy its defects and perfect its character; but, he was unfortunately led to believe his first article to be all that the Profession desired, and the Prepared Gold was therefore sent out to the world, accompanied by “directions” entirely authorized by the honest but

incautious judgment so far rendered upon it. The Profession were therein told that Crystal Gold required for its successful use, comparatively little time and skill, and that no specific instruments were necessary—the end of a broken file “working admirably!”

This was a great blunder—more—it was a *disaster*! It not only justified, but directed carelessness, and gave an entirely mistaken idea of the requirements and qualities of the Gold. If a Dentist, with some clumsy tool, perhaps the “broken file” afore-said, filled a large cavity, half prepared, and the plug, less than half condensed, subsequently came out or went to pieces, he had followed “directions,” and charged the failure to the “Gold.”—The “directions” were at fault, sadly, entirely, yet in preparing them, the Dr. had been misled, as just stated.

As might be supposed, or, at least, as we can now plainly see, Crystal Gold sent out in this way, met with a singular reception. The too sanguine operator expecting too much with inadequate labor—with instruments, at best inappropriate, and most likely none at all to the purpose—released from any obligation to practice proper skill and care, essayed to fill teeth with Sponge Gold, and at once encountered difficulties. The Dr. was straightway inundated with letters from all directions; the general idea pervading them, seemed to be, that the writers had discovered valuable qualities in the new material, which they were anxious to make available to the fullest extent, and each would suggest some specific change, which would improve it for *his* purpose. One wanted it harder—another, softer—with one, it crumbled, was too adhesive, or not adhesive enough, and so on; and here the Dr. committed the second great error.

Being so perfectly conversant with the laws regulating the crystallization of Gold, in the large field opened up by his discoveries, as to be able, at pleasure, to vary the qualities and characteristics of the new material, and only anxious to learn what precise form of production the Profession *wanted*, he actually undertook to manufacture varieties differing sufficiently in character to please this whole mass of correspondents; hoping, thereby, to hit upon the *single* form which would please them *all*. A great amount of time and money was wasted in this effort, and herein is the real cause of the great number of forms and qualities of

Prepared Gold which have been manufactured here and sent over the country; their number and variety being distracting to the Dr. as well as the Profession, and giving just cause for what came to be the general belief, that this diversity arose from some difficulty in the process of manufacture, and that uniformity was really unattainable, *which neither is, nor has, at any time, been true!*

The great confusion produced in the laboratory by attempting so many changes and modifications, necessarily interfered with the regular details of the manufacture, and hence it was, that impurities occasionally escaped detection. This accounts for the discolorations that have been noticed, a result deplorable in the extreme, but now most certainly and reliably guarded against.

This defect was, as we state, purely accidental; the process of manufacture involves no sort of necessity or excuse for the slightest impurity, and our determination to manufacture but the one variety, affords an additional security from such hazard.

In the course of this general effort to please everybody, a series of dark-brown, or wine-colored formations were produced, which possessed peculiar properties. Although not so yielding or plastic in the mass as the brighter forms, they were greatly admired for their *adhesiveness*, and had at once many friends. The general report coming to us, was, that the brown varieties wasted more or less, but readily adhered on pressure, while the bright varieties did not waste at all, and did not adhere so well.

Experience has since demonstrated the following facts in reference to these two varieties of Prepared Gold:

The bright forms, upon comparatively slight pressure, condense *solid*. If the face of the instrument used is *smooth*, though *uneven*, the added piece does not adhere, but comes up, taking a *perfect impression* of the portion already condensed; so perfect is its plasticity, and so fine its structure, that it will take a perfect impression of the most delicate etching, on steel or copper-plate, and completely render every inequality visible through a microscope of high power. But this very quality, invaluable, and *perfect* in this material, requires that it should be continually worked with *sharply and finely-cut surfaces*, that the bearing surface of instruments should be always *kept sharp*, in order that the working surface of the plug may remain sufficiently rough

for the new gold to obtain a hold upon it. The *chief*, almost *sole* requirement of this gold, is *proper tools*; and the Profession, as a mass, had anything but proper tools.

On the other hand, the brown varieties were more deceptive in their character, and by reason of their greater adhesiveness.—The operator could, with the imperfect instruments then in use, and with a certain amount of pressure, produce plugs which were very hard, and to all appearance solid; but which, when examined by the aid of the microscope, were found to be not solid but porous.

It was into the (to the eye) invisible, but innumerable interstices of the apparently condensed mass, that the added gold insinuated itself. Though packed with comparatively smooth instruments, it would still, in this way, adhere finely; and yet this quality of adhesion was due to an imperfection. Operations of this character failed, would crumble to pieces and fall out, authorizing the statements about brick-dust, &c. A greater amount of pressure would make a plug more lasting in its character, but still leave it sufficiently porous to admit of the absorption of moisture. Still greater pressure would obviate the danger from the absorption of fluids, and yet leave the plug lighter than perfectly solid gold. And though perfectly solid plugs have been, and can at any time be made with it, such a result required very perfect instruments, great labor, time, and patience.

Nine-tenths of all the complaints which have been made against Crystal Gold—well-founded, ill-founded, and unfounded—except, perhaps, the more or less slight tendency to crumbling, and therefore waste, which distinguished all the earlier productions, are due to these brown varieties, aided by the want of proper instructions and appropriate and well-made instruments.

From all this, it became evident that Crystal Gold had pressing need of tools made for and adapted to itself. We at once determined to publish a popular treatise on the qualities and use of the gold, embodying all the available experience of skillful and successful operators, in regard to instruments. Dr. Dwinelle, of Cazenovia, N. Y., who had great experience in the use of all forms of Crystal Gold, and who was, with unvarying certainty and success, accomplishing with it the most astonishing triumphs, prepared this "Treatise" for us in an able and satisfactory manner, its sole de-

fect consisting in the inability to distinctly represent, by means of plates, the most important peculiarities of the instruments.— We furthermore resolved to modify the character of the dark varieties, gradually approaching, as nearly as possible, the brighter forms, and, so soon as the “Treatise” and right instruments could be prepared, to cease their manufacture altogether. Accordingly, since about the first of July last, none of the brown varieties have been made.

Now, although in the hands of the same operator, *with right instruments*, there could be no just comparison, in all essential characteristics, between what we have termed the brown and bright varieties, yet we feared to let this *best* material go at once out among the Profession, to be manipulated and tested with the instruments in general use, although we had, perhaps, from being originally misled, as before stated, contributed more than all others, to introduce and justify the use of poor tools. We therefore refused the repeated request of Dr. Dwinelle, and others, (that we would send it out) solely on the grounds stated, that some general knowledge of the characteristics of Crystal Gold, and some specific knowledge of proper instruments should precede its general introduction. Our course, in this respect, has given offence to some persons, and we *may* have been wrong, but when the experienced Dentists, with the *best* of instruments, shall try his hand upon the gold *now* sent out from this establishment, we think he will endorse our course, and thank us for it.

The “Treatise” and the efforts of manufacturers of Dental Instruments, to whom we are under obligations, have so far removed this difficulty, however, that this “reserved” gold is now *only* manufactured.

This highly “improved,” and as we regard it, “*perfected*” article, is claimed to be free from the objections which have been urged against any previous form of Sponge or Crystal Gold. It is soft, silky, not friable, condenses readily, makes a perfectly solid plug, with less pressure than the other varieties, and will not change in color, permanence, or other characteristics, in or out of the mouth, in the least. We are entirely aware of the great breadth of this statement, but we are willing to put every thing at hazard on its absolute truthfulness. It *must* (we have explained why,) be used with finely and sharply cut points, and

be thoroughly condensed, yet it requires less pressure, to secure perfect consolidation, than any other form of Gold now used.

We know that the varying character of Crystalline Gold as heretofore made, its often real defects, and the difficulty, in most cases impossibility, of obtaining fit instruments, have prejudiced and weaned many from its use altogether. Yet the universal response to us proves that few such have failed to discover qualities which would render it invaluable in their hands if not linked to imperfections in the material and uncertainty in the manufacture. To all such, and the entire Dental Profession, we say that the period of trial, experiment, change, and uncertainty has passed. We make and abide by the merits of but one form of Gold—uniform in all respects, except in the differing density which distinguishes the various numbers—susceptible of every use, and competent to every triumph which the most ardent admirer has ever hoped to accomplish with it.

A. J. WATTS & Co.

UTICA, N. Y., October 27th, 1855.

All persons having Prepared Gold, manufactured by us previous to the first of July last, are requested to forward the same to us and exchange it for the perfected article.

A. J. W. & Co.

EDITORIAL.

The amalgam question is again to be the subject of discussion. We may all expect to hear and see enough of it. Under the name of "the new alloy," which it certainly is not, the discussion of it commenced in the Pennsylvania Association of Dental Surgeons, at its last session, and after some "holding forth," as to its merits and demerits, the subject was made the question for discussion at the ensuing meeting.

We shall feel interested in knowing the result. If by the new method of preparing amalgam, all of its objectionable qualities are done away with, no one will

hail it with a heartier welcome than we shall. So far, Dr. Townsend appears as its sole public supporter. We hope that ere long he will give more at length his views and more particularly his *experience* in relation to it. It would interest the Profession very much to know how long, and with how much success it has been used, and also who is entitled to the credit of its discovery or invention. We predict that many will approve and many condemn it, without regard to reasoning or facts, so shall not we.

In the present number will be found an article from Messrs. A. J. Watts & Co., manufacturers of Crystallized Gold. We believe that this new preparation is steadily and rapidly gaining favor with the Profession. The quality of the material has been vastly improved, and the manufacturers have determined to issue but one variety, instead of the many hitherto offered. The adoption of this rule of course gives a greater security of uniformity in its working qualities. To those who have yet to give the Crystallized Gold a trial, we would urge the importance of suitable instruments; without them, no successful or practical experiments can be made. The method of using it is entirely different from the manipulation required when foil is used, and of course, different instruments are requisite.

In the next number of the RECORDER we shall furnish our subscribers with patterns of some recently improved handles for Plugging Instruments. Any thing that will enable the operator to accomplish a certain amount of labor with less fatigue than usual, will certainly be appreciated and valued. We think that something like an advance has been made in this direction, and as we have used the new patterns sufficiently to test their merits, we consider it quite time the profession should have the benefit of the improvement.

CORRESPONDENTS, SUBSCRIBERS, EXCHANGES, &c., are requested to direct all Communications relative to the financial or business departments of this Journal, to "SUTTON & RAYNOR, 609 Broadway, N. Y.;" and articles for publication, books for review, exchanges, reports of society meetings, and all correspondence belonging to the editorial department, to "EDITOR OF DENTAL RECORDER, 139 Fourth Avenue, N. Y."

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CASES OF ALVEOLAR ABSCESS.

(CONTINUED FROM PAGE 226.)

July 11th, 1854.—Mrs. H. applied for relief from pain resulting from an abscess connected with the second right superior bicuspid. The tooth had been filled, after the application of arsenic, applied for the purpose of obtunding the sensibility of the dentine; and since that time had always given more or less trouble.

At the time of the patient's application to me, the periosteum appeared much inflamed; there was no visible discharge, though there had been at other times. Tooth much discolored; seemed to be forced downwards out of the socket; felt longer than the others; could not close the mouth without causing intense pain.

Treatment.—The filling was removed; an opening made into the nerve cavity, and the usual application made.

July 12th.—Floss removed; symptoms improved; much less tenderness upon pressure being applied. Removed the discolored bone that lined the nerve cavity. This part of the operation left the tooth in a much better condition, so far as color was concerned. Made a new application of floss moistened with creosote. In the after part of the day this was removed, the canal thoroughly cleaned, and as the patient was compelled to leave the city the next morning, the operations of filling the nerve canal and the crown cavity were completed. This was contrary to our usual course of practice in these cases. We generally allow an interval of at least twenty-four hours to elapse between the performance of the two operations of filling the nerve canal and the cavity of decay. The case, however, terminated favorably.

At the same date, we treated a very similar case, for a relative of the above. The tooth was a first bicuspid: it was not painful at the time we operated upon it, and this was the only feature in the case differing from the one mentioned above. The treatment was commenced on the same day, finished at the same time, and for the same reasons, the result being equally satisfactory.

Mrs. D.—Nov. 20th, 1855.—Case of abscess, arising from second left superior bicuspid; had existed for some months; and for ten days previous to application had caused almost constant trouble; soreness of the tooth, and pain extending throughout the left side of the face being particularly complained of.

Treatment.—Removed an old and imperfect gold filling from the crown, and thoroughly cleaned out the canal, which was unusually large, throughout its whole extent; filled canal with floss silk moistened with creosote, and sealed up the cavity with wax.

21st.—Patient had suffered considerably during the previous night; some swelling of the gum covering the palatine portion of the alveolar process; removed the floss, and washed the canal thoroughly with tepid water; renewed application.

Dec. 4th.—No unpleasant symptoms since last application; have seen the patient almost every day since; concluded to fill the fang.

Dec. 6th.—Met the patient. No trouble; the case promises to terminate favorably.

The foregoing will conclude for the present our publication of these cases. We have almost "any quantity" recorded upon our books; but they are too similar in character, treatment and result, to add any thing but length to this paper. We have, however, several very singularly complicated cases which have been, we believe, permanently cured; but we prefer adding to our own opinion the weight and authority of "Father Time." For when we have the oldest inhabitant on our side, who shall contradict? When thus fortified, we shall "speak out in meeting."

In the coming numbers of the Recorder we purpose giving a series of articles on the diseases of the Dental Pulp and their treatment.

LOCAL ANÆSTHESIA BY CONGELATION IN DENTAL SURGERY.

BY J. RICHARD QUINTON, LONDON.

It is a singular coincidence that there should have appeared in one and the same number of this Journal, sentiments both favorable and adverse to the induction of anæsthesia in dental surgery. In the last April number, Mr. Robinson takes up the cause of anæsthesia, in a leading article, while Dr. Dwinelle, in his valedictory address to the dental graduates, cursorily says, "Let me caution you never to use anæsthetics in your practice, except under circumstances of extreme necessity." We may view these two advocates of an essentially diverse practice, as expositors of certain great principles, and as the media of certain important confessions. Let us abolish pain at any cost, says the one—withhold your hand from that poisoned cup, says the other. An anæsthetic in dental practice is highly desirable, says the one—but the other replies, your anæsthetic is unsafe to your patient's life, and jeopardises your moral reputation; if you must give it, then let it be "only in the presence of a third person; you owe this to your patients, and your profession, as well as to yourselves," (p. 219,) if you do not kill your patient right out, remember, that in that artificial sleep lascivious dreams may come which, as in more than one instance, may wear the aspect of reality. The question as it now stands between these two expositors, who may be considered as representing the feelings of two great classes of the community, is, the abolition of pain at grave risks, or a continuance in the old method of inflicting pain without alleviation. Whatever may be the real state of the question, such is the form it assumes in the public mind.

Pain is ever repugnant to humanity. It is necessarily so—wisely so. Especially that artificial pain, which, in the exercise of our profession we unavoidably induce by surgical interference. The pain of tooth extraction is by no means the least severe in surgery. It is the object of terror to most. The nervous patient, through the mental dread of what must come, suffers an hundred extractions all probably affecting and lowering the tone of the nervous system. This expectant suffering, shadows forth

the magnitude of the reality. Who is there that would not be spared such pain? Yet how rarely, in this country at least, are the accessible means resorted to, either by dentists or patients, which might spare that pain. A great confession lies at the bottom of this. Has humanity departed from our art? Are the dentist's nerves steeled against a refined sympathy for the suffering? We do not believe it. We believe that our dentists do not find in etherization an unmixed good. Even Mr. Robinson tells us, in effect, that it is very easy by etherization to invade the sacredness of human life? that we may trespass on forbidden grounds? and that, if we do so trespass, we should take with us "the patient's medical adviser?" and have a cabinet of paraphernalia at hand, "sponges and cold water," "diffusible stimulants," "jars of oxygen gas," "galvanic batteries," &c, and all these, notwithstanding the practitioner has served a due preliminary apprenticeship in etherizing "the lower animals," and noting in them that "debility," that "asphyxia," and that melancholy "reaction," which at any moment he may be called upon under similar circumstances to witness in the human subject. And if even an experienced etherizer finds it necessary to have such an array of resources at hand, can we wonder that timorous patients should conclude, that an awful gloom of uncertainty surrounds this artificial unconsciousness. If when any one of thirty-two teeth turns rebellious, a cabinet council must be held, composed of patient, the patient's doctor, and the patient's dentist, if the pulse is to be noted by the finger, the heart invested by the stethoscope, and the lungs percussed and auscultated, all for the sake of saving what may be but a brief though confessedly severe pain, it must appear to the commonest sense, that a great disparity, exists between the means proposed and the end to be obtained. The question must occur, as it has occurred again and again, *is it justifiable to administer chloroform in dentistry?*

The answer to this question depends in part upon the estimate formed of the risks incurred. Individually, I may value these risks as exceedingly trifling in competent hands. Considerable experience in the use of this anæsthetic agent may have led me to see in it far less of the destroyer than the fancies of others seem to elicit from it. But at the same time several considerations present themselves.

“ First, the pain of tooth-extraction, though severe, is brief in duration. In numerous instances, the mere pain itself rarely is productive of graver consequences than the momentary shock. In persons highly susceptible of pain, or in certain states of constitution, it is doubtless often of the utmost importance to obviate even this short duration of pain, though perhaps not at a possible sacrifice of life itself. Secondly, it is not ordinarily an operation attended with very grave results. It is not often that the mortality tables are increased by untoward results in dental surgery. The wound caused by extraction is in its nature comparatively slight, and easy of reparation. There is no large mass of tissue to be united, no structures likely to take on extensive inflammation, no pyohæmia, nor phlebitis ; no deleterious influence, in fact, bears upon the general system capable of producing the great mortality of many surgical operations. In many of the capital operations, for example, the chances of recovery are extremely small, and indeed in some they are almost reduced to *nil*. The difference then lies in this, that in many surgical operations fatal results are *expected* to occur in certain proportions ; while in tooth-extraction such a result may almost be said never to occur. A patient, yielding himself to the doubtful result of returning to life under chloroform in the one case, only throws away so many chances as he might have possessed from the peculiar nature and attendant mortality of the operation itself ; while in the other case, the mortality being *nil*, he makes, in inhaling chloroform, an unconditional and unqualified surrender to the possibility of death. The value of a man's life, in the one case, is but as 1 in 2, 3, 4, or 5, and so on ; whilst in the other, it is equal to that of the average of the community to which he belongs. Now, putting aside the consideration whether a man has any moral right to trifle with the destinies of human existence, we say, viewing the subject in this double aspect, viz:— the value of any given life under the two kinds of operation, and the brief duration of pain sought to be escaped from, that it is very open to debate if it be justifiable in such an operation as tooth extraction, to resort to an agent to produce insensibility, which may result in the loss of life. It is this conviction, we have no doubt which has ever prevented the general adoption of etherization in dentistry. If a man undergoing an operation, knows that

his chances of life are small, and that the severity of the accompanying pain is such as to diminish even the few chances he has, then he may, perhaps, in the *absence of better means*, legitimately resort to chloroform ; but on the other hand, if his chances of life are equal to those of the general community, and the accompanying pain of the operation is of but brief severity, may he legitimately yield himself to such an anæsthetic agent? The circumstances attending the loss of a thigh may warrant the risk of life by anæsthesia ; but to say that the circumstances attending the loss of a tooth should be put on equality with the *possible loss of life*, appears an anomaly, at which our moral sentiment recoils."

Fortunately, we are now relieved from the difficulty of the question, by the introduction into dental practice of a *local* anæsthetic agent, which, while it is efficient, is open to none of the grave objections of etherization ; viz. the *anæsthetic application of intense cold*.

For several years past the attention of surgeons in this country, and in France, has been directed to congelation as an available anæsthetic in minor operations ; and the great success which has attended its employment, has given it high rank among the humane appliances of surgery ; and the more prominently, because its influence is purely local. It admits of no dispute that a great advance is made in anæsthetic science, when the unhappy victims of the surgeon's art, can look with smiles, unknown where pain exists, on the fleshing of the surgeon's knife on their own bodies.

Then comes the question, is congelation applicable in dentistry? *A priori* everything seemed to contra-indicate its applicability. The ordinary methods indeed of producing insensibility by cold, as proposed by its originator, Dr. Arnst, were wholly inapplicable in dental operations. It was not possible to keep thrusting into a patient's mouth, a succession of net bags filled with a freezing mixture, nor to fill the mouth, or even touch a tooth, with a metallic ball previously immersed in a cooled fluid. These may have served their purpose well enough upon the external surfaces of the body, but were useless for such a heated cavity as the mouth, with its peculiar anatomical structure and relations.

It was with these difficulties presenting themselves, that Mr.

Blundell and myself instituted a series of experiments, in order to obtain a method of applying cold as an anæsthetic in dentistry. The first thing required was to supersede the solid form of the freezing mixture by a *fluid medium*. This was easily accomplished; for, as is well known, by the chemical action of various salts upon finely pounded ice or snow, a fluid results of a temperature varying from 20° above to 40° or lower, below zero (Fahr.) By combining these in sufficient quantity, we were able to keep and apply *an unalterable temperature* to any given surface. The conduction of heat, which takes place when a freezing mixture is applied in the mouth, is so great and rapid as to render the solid form of mixture ineffective from the raising of its own temperature. But as the *fluid* mixture flows over the part, the heat absorbed by it is at once carried away, and the original intensity of cold is renewed. So that by this means we were able to apply to the mouth *an invariable intensity of cold, and that of unlimited duration*.

An apparatus was constructed, consisting of a reservoir for the cool fluid or freezing mixture, with tubes to conduct the fluid, through a membranous mouthpiece, adjusted over and around the tooth, and stop-cocks to regulate the flow. With this apparatus we commenced to operate, and with such signal success, as to encourage the prosecution of the new method up to its present complete state.

Thus was the first difficulty overcome; and thus for the first time was a *fluid current* applied to produce local insensibility by congelation for operative surgery.

For many dental operations, such as the extraction of stumps, and even molar teeth under certain conditions, this comparatively imperfect apparatus was perfectly satisfactory and effective. But another difficulty soon presented itself, confirming my previous expectations. It had always occurred to me that the direct application of an intense cold to such sensitive organs as the teeth, would be productive of a pain severe enough to preclude its use in dental operations. It was consequently with a degree of astonishment, almost amounting to incredulity, that we received the assurance from the first patients submitted to this new anæsthetic, that; not only was the extraction itself painless, but that the application of the cold was equally so. On

investigating the peculiarities of these cases, this immunity from the pain of the application, appeared susceptible of explanation. The dreaded fact, however, soon stared us in the face, that wherever vitality still remained in the condemned tooth, or in others in its immediate vicinity, the direct application of an intense cold, was attended with such excruciating pain, as to render its employment both cruel and impracticable. Our first successes, so full of promise, so hopefully cheering, thus met with a check which well nigh blighted all hope. But, nothing daunted by failure, a new series of experiments was instituted, many of them on my own teeth, &c., which experiments terminated in the discovery, that, in order to apply an intense cold to a highly sensitive surface without giving pain, the temperature of the cooling fluid or medium must, in the first instance, be equal to the temperature of the part to be cooled. And, further, that the temperature must be diminished by a slow gradation until the maximum degree required is arrived at. Working upon this induction, a variety of apparatus was constructed to secure the required graduation of the cooling fluid. Though science and art presented many available modes of accomplishing the object, yet we have found nothing more simple, convenient, and effectual, than plain warm water, that is when the cooling fluid employed is the chemical result of the freezing mixture itself. Thus, for example, suppose the reservoir to contain a due admixture of pounded ice and salt, the temperature of which is zero. Let the fluid traverse in its course a vessel of warm water, a mutual diffusion of temperatures takes place, and the result is, that a gradual diminution of temperature will be gained at will, from any degree of the thermometer down to zero. With a similar apparatus to this our first essays were made, and we had the gratification of finding the working of it perfect. Commencing at about blood-heat we proceeded to apply the cooling fluid to the tooth of a patient, (after numerous trials on my own person,) which tooth was full of vitality, and the gratifying result was, not only the *painless extraction* of the tooth, but the *painless application of the cold*. From that time, nearly twelve months ago, to this, a large number of successful operations, has most unequivocally demonstrated, that the time has now come, that we may save our patients the agonies of tooth ex-

traction, without, for a single moment, depriving them of their valued consciousness.

The work was not, however, completed, though the great object was attained. It would be tedious to give in detail the minutiae of such endeavors; the difficulties which had to be surmounted, the mechanical contrivances which had to be devised, &c. I will make allusion only to one, because it has been made the subject of remark in an article upon this topic by Mr. Robinson. That gentleman states, that in his attempts to imitate our discoveries, he found his "fowls' stomachs" and "sausage skins" discharge their contents into his patients' stomachs and thereby nauseate them. No part of the apparatus was so difficult of contrivance, as that intended to surround the tooth. *Tenuity* was needed in order to conduct with sufficient readiness the temperature of the cooling fluid to the part to be benumbed; *flexibility* was essential to its perfect adaptation to the varying forms of the teeth and gums; *impermeability* was required to prevent the contained fluid issuing into the mouth or down the esophagus; while a certain elasticity, or resistance of pressure, was necessary, to prevent a rupture of the reservoir, either by the force of the current, or by coming in contact with roughened points or tubercles of the teeth. All membranous structures, like those of animals' stomachs or intestines, are open to the fatal objection, that they become pervious in parts where the blood vessels ramify, as well as that throughout their whole surface they allow of exosmosis. Whenever these were used, the patient always could taste the saline character of the freezing mixture, which should not, and upon my plan, does not occur. Membranes, whether taken from a "fowl's stomach," a "pork sausage," or the "intestine of a rat," while they are flexible, are neither very attenuated nor impermeable, nor elastic, nor, it may be added, of very refined taste. After trying almost every known material, I at length succeeded in making a preparation of India rubber from a solution in chloroform, out of which exceedingly attenuated, almost transparent tubes of any size are made, having all the essential properties above referred to. In consequence, it never happens in my practice to administer to my patients the emetic which Mr. Robinson finds so common in his practice.

[TO BE CONTINUED.]

KÖLLIKER'S MICROSCOPICAL ANATOMY.

[One vol. 8vo. Published by Lippincott, Grambo & Co., Phila.]

SPECIAL HISTOLOGY. OF THE TEETH.

APPENDIX.

§ 4. *Development of the Teeth.*—In an Essay on this subject in the "Quarterly Journal of Microscopical Science," for April, 1853, we have taken a very different view from that advocated by Prof. Kolliker, and which amounts to this, that all the tunics of the teeth are the result of calcareous deposition from the pulp, the so-called "enamel organ" taking no direct share whatever in the process. This view was based upon observations made upon the teeth of all the principal orders of the Vertebrata, *i. e.*, the Mackerel, the Skate, the Frog, the Calf, and Man; and subsequent observations on these and on other animals, have only confirmed our belief in the substantial truth of the *matters of fact* there stated.

The keystone of the theory of dental development there enunciated is the fact, that, in all the orders of the Vertebrata, a membrane homologous with the so called "persistent capsule," discovered, in 1839, by Mr. Nasmyth, and which we have therefore denominated "*Nasmyth's membrane*," can be demonstrated covering the enamel of the teeth and extending over the dentine, to be continuous with the *membrana preformativa* and *basement membrane* of the sac, in an incompletely formed tooth; or with the surface of the cement, in a fully developed one. Nasmyth's membrane, in fact, *is* at first the *membrana preformativa* more or less altered.

We hold this statement to be incontrovertible, nor less so the correlated doctrine, that the enamel and cement, as well as the dentine, are developed *beneath* Nasmyth's membrane, between it and the pulp; that the enamel is, consequently, during the whole course of its formation, separated from the enamel-organ by Nasmyth's membrane: and that, therefore, the direct conversion of the long cylinders of the epithelium into the fibres of the enamel, strongly as their mutual resemblance may suggest the notion, is, to say the least, highly improbable.

Thirdly we have met with no facts in opposition to what we have stated with regard to the mode of development of dentine and the relation of the latter to the pre-existing elements of the pulp, and we believe that there is every reason to regard what we have there called the "Deposition theory," as an established position. According to this theory, the dentine is *not* the result of

the *conversion* of the elements of the pulp; the endoplasts of the latter never becoming engaged in the calcareous deposit, as they are in bone; but the young dentine is formed by a deposit of transparent calcareous granules in a thin layer between the pulp and the *membrana preformativa*. It must be understood, however, that the latter two structures are continuous, and that when the dentine is said to be deposited between them it is not meant that any real interval exists, but only that the outer portion of the periplast of the pulp, of which the *membrana preformativa* constitutes a part, increases and receives a calcareous deposit without any corresponding implication of the endoplasts of the pulp.

The thinnest and youngest layer of the dentine appears to be structureless, which may, however, arise from the small quantity of calcareous matter which it contains: subsequently, minute cavities, irregular in form, and 1-5000th of an inch apart, appear in it; and these corresponding with one another in successive layers of the dentine, become the dentinal tubuli. The appearance of walls, &c., to these tubuli, we consider to be the result of a subsequent differentiation in the dentine.

A careful study of the mode in which the dentine-like tegumentary organs of many of the lower animals (Fishes, Articulata Mollusca) are formed, has afforded the fullest confirmation of this theory of the development of dentine, and we would recommend those who have any doubt upon the subject to study the development of the spines of the Skate, or that of the shell of the Crab or Lobster.

The mode of development of the enamel appears to us to be a very difficult subject, and requires to be most carefully studied. Taking into consideration the facts that a distinction of a superficial and a deep layer of calcified tissue is very general in the tegumentary organs—that in a Molluscan shell, for instance (*e. g. Trigon*ia), we may have a superficial membranous layer corresponding with Nasmyth's membrane, a deeper prismatic layer, whose prisms precisely resemble those of enamel on a large scale, and an internal laminated tubular layer, corresponding with dentine; and knowing, further, that these varieties of structure thus arranged are (whatever view we take of shell-structure) nothing but the result of the different modes in which calcified deposit has successively taken place in the same organ, it is sufficiently obvious that there are abundant analogical grounds for considering the enamel and the dentine as modifications of one and the same tissue.

Nor does the structure of the enamel in the Fish or the Batrachian present any difficulty in the way of this view. It is, at most, indistinctly fibrous and contains so large a quantity of calcareous matter in proportion to the dentine that the differences

between the two may well be supposed to arise—as we believe they do—from this circumstance alone.

In the higher Vertebrata, however, when the enamel in its young state consists of definite fibres composed of organic substance, which are added to the surface of the tooth only *after* the formation of a subjacent scale of dentine, it becomes more difficult to comprehend the development of the former. There appears to be three possibilities.

1. What we call the primary scale of dentine is not, on the crown of the tooth, dentine at all, but young enamel, becoming converted into the latter structure, and not into the former, as development proceeds. This appears, at first sight, a startling hypothesis enough; but there are, so far as we know, no means of disproving it. Young dentine can only be known to be such by its relations; in structure it is neither like perfect dentine nor like perfect enamel; but might readily be supposed to be converted into either by variation in the quantity and mode of deposition of its calcareous element. If this deposit be comparatively small, leaving much of the organic basis, and not encroaching upon the existing cavities, we have dentine; increase the quantity of calcareous salts, and break up the organic basis at the same time into fibres, and enamel would be produced.

2. The enamel is the *indirect* product of the prismatic cells of the enamel organ, whose inner extremities pass into successive layers of membrane, which are applied upon and indistinguishably unite with the *membrana preformativa* over the whole surface of the developing enamel. The laminated membrane thus formed receives a calcareous deposit, and breaks up into the prisms of the enamel.

This hypothesis likewise, at first sight, appears somewhat improbable, but it may be strictly paralleled with what occurs in the formation of prismatic shell substance, where a laminated membranous substance is produced from the cellular epidermis of the mantle, and subsequently breaks up into the characteristic, large, transversely striated prisms.

3. The enamel is neither the result of the modification of the primary "dentine," nor superimposed on this from the enamel organ, but a *tertium quid*, the product of the growth and metamorphosis of that excessively thin layer of organic matter which lies between the dentine and the enamel.

In support of this view, also, a very close analogy may be found in the mode of development of the shaft of the hair—a structure which exhibits the closest correspondence with the teeth. The fibrous cortex of the hair is, in fact, homologous with dentine; it is a horny dentine, containing rudimentary canals. External to this substance we find two layers; the inner compos-

ed of parallel horny, structureless plates, closely united and set obliquely on the shaft, in fact, a rudimentary horny enamel; the outer consisting of a tough areolated membrane, *outer layer of the cuticle*, whose resemblance to Nasmyth's membrane cannot be overlooked. Now, if we trace the development of these layers in the long hairs of the head, we find that they pass on the bulb into a structureless liminary membrane, beneath which lie the endoplasts of the pulp; this is, in fact, a *membrana preformativa* of the hair pulp. Passing from the base towards the apex of the hair, the deep endoplasts become surrounded by the horny matter and the pigment-granules of the cortex, while the superficial layer remains free from the latter, but gradually becomes horny, and loses its endoplasts. Its outer portion then becomes the areolated outer (Nasmyth's membrane) cuticular layer, while its inner portion breaks up into the parallel plates of the inner (enamel) cuticular layer. So far as we have been able to observe in the long hair, however, the disappearance of the endoplasts takes place *before* areolation and lamination of the periplast which corresponded to them, so that, as we have already stated (note, page 181), the cuticle does here pass into an apparently structureless layer. This, however, is not, as it seemed, a real discrepancy from Prof. Kölliker's views, for in the short thick hairs, such as those of the nostril, the endoplasts persist longer, and we see that, as he states, the areolations of the outer cuticle are the representatives of the cell-cavities of the outer layer of the pulp; while the laminae of the inner layer are the result of the lamination of the next layer of the pulp, whose endoplasts may be seen gradually disappearing, whilst its periplast breaks up into plates.

Now in the long hairs we have a relation of the outer cuticle to the cortex very similar to that of Nasmyth's membrane to the dentine before the development of the enamel, and the conclusion is obvious, that as the development of the inner layer of the cuticle takes place by the differentiation of the intermediate substance between the cuticle and cortex so that of the enamel may take place in the same way in relation to Nasmyth's membrane and the dentine.

These would appear to be the alternatives concerning the development of the enamel. At present facts would seem to be wanting to determine definitely which should be accepted.

Finally comes the question of interpretation of the phenomena of development of the dental tissues, and the determination of the homologies of the latter with the pre-existing elements of the mucous membrane. Professor Kölliker's views are stated in the text. He considers the dentine and the cement to be the calcified

corium of the mucous membrane, while the enamel is the calcified epithelium.

The view we have ourselves taken is that cement, dentine, and enamel, are calcifications in the same constituent of the mucous membrane, and, in fact, that they entirely belong to its corium or dermal element. Taking for granted that the *membrana preformativa* was a basement membrane, and furthermore, the received doctrine that a basement membrane marks the boundary between the dermal and epidermal elements of integument or mucous membrane, it was, in fact, impossible to come to any other conclusion. An extensive study of the integumentary organs, however, has led us to reflect more closely upon this matter, and to enquire what is a basement membrane, and what is the real distinction between the epidermic and the dermic elements of a membrane? We cannot here enter into the grounds for our conclusions (which will be stated in full in a forthcoming article on the "Integumentary System," in Todd's "Cyclopædia of Anatomy and Physiology"), but must be content merely to state our conclusions that the existence of a basement membrane, *i. e.*, of a structureless membrane, internal or external to it, proves nothing with regard to the dermic or epidermic nature of an organ, but that we must be guided entirely by the direction of its growth and metamorphosis. Every integument and every mucous membrane may, in fact, be distinguished into three portions; a central plane of indifferent tissue, from which growth and metamorphosis take place externally, to constitute the representative of epidermis or epithelium, to which we propose to give the name of *ecderon*; while internally, growth and metamorphosis take place from the central plane, so as to constitute the representative of the derm or "mucosa," which we have termed the *enderon*.

Now the dental pulp is a process of the whole integument, and its outer surface, although bounded by a "basement membrane," truly represents the deepest layer of the *ecderon* of ordinary integument, while its inner substance belongs to the *enderon*. Although, therefore, the dentine is not a calcified cellular epidermis, it is a calcified *ecderon*, and grows in the same manner as an *ecderon* would do. The cement follows the dentine, and whatever the view we take of the development of the enamel, it also belongs to the *ecderon*. Although, therefore, the teeth are not, in the ordinary sense, epidermic structures, they are homologous with the *ecderon*, and not with the true derma or *enderon* of the mucous membrane.

THE DENTAL PATENT-RIGHT CASE.—Yesterday morning, the dental patent-right infringement case — Dr. John Allen *vs.* Dr. W. M. Hunter—came up before the United States Circuit Court, upon a motion for a new trial. Henry Stansbury, Esq., appeared on the part of the plaintiff, and Judge Matthews for the defendant. Judge McLean, after reviewing the testimony and main points of the case, overruled the motion. It will be recollected that this case occupied the attention of the court eight days in its trial, a few months since, and a verdict was rendered by the jury in favor of Dr. Hunter. The decision of yesterday settles the matter, we believe, definitely.

[*Cincinnati paper*, Nov. 6.]

CORRESPONDENCE.

FOR THE DENTAL RECORDER.

MR. EDITOR :

Lest a wrong inference should be drawn from the ex-parte report of the late motion for a new trial in the case of Allen *vs.* Hunter, I deem it proper to state, that from official advices from Cincinnati, I learn, that a new trial was not granted *because* of the *compromise* that had been made between the parties, and *not* upon the merits of the case.

There were two points of issue involved in the late trial, as above. One was the validity of the patent, which remains good ; and the other was the infringement by the defendant. Upon this point the evidence was too weak as *construed* by the jury, as there was but one set of teeth adduced in evidence which defendant had made, and for that he had received no compensation. This point is now being tested in other cases of infringement, in the United States Court, in this city. There are gentlemen here with large capital and a high order of legal talent whose whole attention is devoted to patent cases, who have, after careful investigation, voluntarily taken hold of this patent, with a view to place it beyond all cavil, and the most vigorous prosecutions are now going forward for the accomplishment of that object.

J. ALLEN.

MADISON, INDIANA, Dec. 10th, 1855.

MR. EDITOR :

SIR—You will do me a favor, and I doubt not confer the same to many of the profession, if you can spare room in your journal to insert a few lines on the proper use of Gutta Percha as a base for artificial teeth.

Some few weeks since I sent a small circular to as many of the pro-

fession as I could learn of their whereabouts giving the result of a course of experiments that I had made with Gutta Percha.

I had no idea at that time it would attract so much attention or be received so favorably by the profession.

I then offered it to the profession for temporary work, and for nothing more, and that is all I now claim for it. I stated, at the same time, that I was satisfied that in many cases it might be used to advantage for permanent work; and from my experience since that time, as I became better acquainted with the properties of gutta percha and the manner of working it, my impression is, that in nearly every case where the teeth are long and the gums soft and tender, it will be preferred to any other material for permanent work, both by the patient and dentist.

Gutta percha cannot be used for *every* thing, neither can it be used to advantage in every case, *even for temporary work*. I wish here to state, when gutta percha *can* and cannot be used to advantage, so far as my own experience goes. *Others* may claim what they choose. Where teeth are extremely short and set close together, you have not the room to unite the gutta percha through and around the teeth, so as to make it firm and durable. If short teeth were made with narrow necks, so as to let the gutta percha pass freely through and unite firmly on the other side, it might do well. The teeth that are best adapted to this kind of work, are those made for Allen's continuous gum work. They have narrow necks, and will permit the gutta percha to pass freely between them, and unite firmly around the teeth, and, at the same time, adhere firmly to the gutta percha on the opposite side. This is necessary, both for strength and neatness, and, if properly done, will prevent any food from lodging around the teeth, or even moisture getting between the teeth and gutta percha; thereby preventing any unpleasant smell that would naturally arise from it. Common plate teeth must do well if ground narrow at the base. It is as necessary for a dentist to exercise his judgment in the working of gutta percha, as in any other part of his duties. It is impossible to stick gutta percha on plate, or on the teeth, and have it remain long, unless a man understands well the manner of working it, and then it requires judgment to know when and where it should be used.

I have spent a great deal of time and money in learning the best way of working gutta percha, and to make it as simple as possible. I don't pretend to have perfected the working of this material, but one thing I do say, that unless a dentist is well posted up in the manner of working of gutta percha, he will find it cheaper for him to pay any reasonable sum for that instruction, than to learn it from his own experience, that is, if he values his time worth anything, throwing aside the expense and trouble. I have, within the last six weeks, instructed a large number of dentists. Some work it beautifully, while others make a perfect botch of it.

It is not only necessary for a man to see it done, but he must take hold and do it himself; and if he should fail the first time, *no matter*, try again. The only way that gutta percha can be brought to that perfection that our profession needs, is for every one to try and make some better improvement; and when these are all combined, I doubt not we shall have just the thing we want. My greatest fears are, that the profession, as a mass, are expecting too much of this new material, and will use and re-

commend it when they ought not to, and thereby kill it in the bud. I find dentists are like every body else, too much inclined to make a hobby of a new thing, and use it in every case, and recommend it to all their patients as being superior to everything else, and then, if it should not prove what *they themselves* claim for it, will condemn it as being a *great humbug*. Such has been the fate of some of our most valuable improvements; and such may be the fate of gutta percha, if not used with more judgment than some are now doing. My intention is to try and bring this improvement within the reach of every dentist, but not to force it upon any one. I don't think it possible for me to explain the manner of working gutta percha, on paper, so that a dentist can work it successfully without further instructions, unless he is well posted upon its peculiar properties, and has experimented with it before. Such is the opinion of nearly all, when they have once seen it worked. I am not selling a patent-right. If a dentist wishes to learn my manner of putting up that style of work, I *instruct* him, or cause my agents to do so, and charge him a reasonable price for my services.

On my first bringing this before the profession, I made application for a patent for my mode of working gutta percha, but, by the advice of a number of dentists, who thought it must prejudice many against it, I withdrew that application, and secured myself on the gutta percha; that is, my manner of refining and coloring it; and then sell no man the material, unless he has first been instructed how to use it. In this way I secure myself, and give those that have received instructions better security than I could by a patent. I have several agents in the United States, who are authorized to instruct dentists in the manner of doing this work, and they will bring it within the reach of all. I have made Messrs. Jones, White and McCurdy, of New-York and Philadelphia, my only agents for the manufacturing and sale of the colored gutta percha; and from the well-known reputation of this house, I think the profession may rest assured that they will receive nothing from their hands but what is pure, and that they will do the best to make every improvement that is possible to make with gutta percha for dental purposes.

The cost of gutta percha for a full upper set of teeth, is from seventy-five cents to one dollar and fifty cents, with no waste; and the time usually spent in making them is about four hours, and, when properly done, will wear smooth and hard. It can be made as firm as any plate work, and look as well as the best gum teeth.

To keep this work clean and sweet, all that is necessary is to give your patient a suitable brush, and have them use soap and water freely.

I have deemed it necessary to make these explanations, that any one may see what *I do claim* and what I do not, and how the gutta percha is disposed of, the cost of material, and who it can be obtained from. Any one wishing further information on this subject, I will give it cheerfully.

Yours respectfully,

N. B. SLAYTON.

EDITORIAL.

GUTTA PERCHA.—We give our readers the benefit of the following anonymous contribution—name, and locality are alike wanting. But “Uncle Sam” had defaced the envelope with one of those little circular red letter inscriptions, which was without difficulty deciphered; and thus we became acquainted with a singular coincidence, viz. that the author of the letter and the inventor of the new method of using gutta percha for dental purposes hail from the same town, “Madison, Indiana.” Taking this fact into consideration, our incognito’s strictures upon the use of the improvement and his *inconsistently* expressed desire that “the whole profession should be benefitted without monopoly,” we are safe in concluding that “disinterested benevolence” is not more plenty in the West than it is in more thickly populated regions. A knowledge of this fact does not surprise us. Things have arrived at such a pass in the dental profession, that the man who makes or advocates an improvement, although his services may be generally acknowledged by the profession *abroad*, those at *home* consider him a legitimate object of attack and persecution, and at once adopting the Jesuitical principle, that “the end justifies the means,” proceed to “burn, sink, kill and destroy,” with all the vindictiveness of a licensed *privateersman*.

CHARLES W. BALLARD, EDITOR DENTAL RECORDER,

DEAR SIR:—In the January number of the Dental Recorder was an article on Gutta Percha bases for artificial teeth, from the pen of Dr. D. C. Estes, of Albany, but I have seen nothing since. As the subject is now more fully before the profession, would it not be useful as well as interesting, to have a discussion from your pen (or contributors) in the Dental Recorder, on the application of gutta percha to dentistry?

How does gutta percha prove on trial? Some say it slides from the teeth on wearing—that it brushes up rough in cleansing—gives an unpleasant taste to soups (oily substances), stains with tobacco, et cetera. Numbers have tried it, and after wearing a short time, discarded it.

From all which, it appears, that we are at present far from having arrived at perfection in the use of gutta percha as a basis for artificial teeth.

Cannot J. D. Chevalier (and others) import the best quality of pure gutta percha, and sell it to the *whole* profession, at a reasonable profit, that any and all who are disposed may experiment farther with the article, give the result in the Recorder and other periodicals, that the whole profession may be benefitted without monopoly? Let him be enquired of. The color of the pure article is good enough for temporary sets, and corresponds quite as well with the color of healthy gums as any yet obtained for permanent sets.

The foregoing is respectfully at your disposal.

SUBSCRIBER.

Nov 16th, 1855.

CASE OF DR. STEPHEN T. BEALE.—The following, copied from one of our daily papers, shows us the last mystery in this most mysterious case:

“**PARDON OF DR. BEALE, THE PHILADELPHIA DENTIST.**—Gov. Pollock, of Pennsylvania, has extended his clemency to Dr. Beale, and remitted the remainder of his sentence of imprisonment, which was four years and six months, beginning on the 28th

of November, 1854. He has served, therefore, about one year of his term. The pardon states the reasons which induced the Governor to extend this favor.

He had received communications from about one hundred and forty dentists and twenty-three physicians, of this city and the country, stating their belief that testimony as to matters transpiring under the influence of ether is unsafe and unreliable; from a number of other physicians named, that they believe him innocent; from a large number of the bar, and citizens of various states, including the names of Governors, Attorneys General, &c., that they believe he was convicted on insufficient testimony; from a number of clergymen, that they believe him innocent; from the Mayor of Philadelphia, and fifty members of the Philadelphia City Councils; from members of the Legislature, Judges of the Supreme Court, editors of Philadelphia newspapers, and five thousand other citizens of Pennsylvania and New York, with five of the jury on the trial, all asking for his pardon. After enumerating all these facts, the Governor says:—

“And whereas, the Board of Inspectors of the said Philadelphia county prison, (as appears by their communication on file in the office of the Secretary of the Commonwealth,) have unanimously recommended the pardon of the said Dr. Stephen T. Beale, because, in their opinion, the end contemplated by the law in the moral reform of the prisoner has been attained—because full and ample satisfaction has been rendered to public sentiment by the imprisonment he has already undergone—because his health is undoubtedly breaking down under the sufferings of body and mind which he has already endured, and because the destitute condition of his aged parents and bereaved and sorrowing wife and children imperatively demand the presence and support of their son, husband and father.

And whereas, after a full and careful examination of the facts and evidences in the case, aided by the scientific discussions to which it has given rise, (without any intention to reflect upon the prosecutrix, who no doubt testified to what she believed did occur, nor to impugn the integrity of the learned judge who tried the case nor the honesty of the jury who convicted the prisoner,) I am now satisfied that the defendant, Dr. Stephen T. Beale, is not guilty of the crime whereof he stands charged, and was convicted upon evidence unreliable in its character and insufficient in amount.

I do, therefore, in consideration of the premises, pardon the said Dr. Stephen T. Beale of the crime whereof he is convicted as aforesaid, and he is hereby fully pardoned accordingly.”

The prisoner has been pardoned, and why? Because thousands had petitioned for his release, upon the ground “that testimony as to matters transpiring under the influence of ether is unsafe and unreliable; and because the Board of Inspectors of the Philadelphia county prison recommended his pardon, in consequence of their belief that the end contemplated by the law in *“the moral reform of the prisoner, has been attained.”* Consequently they must have believed him guilty; for where there is no guilt, there can be no repentance; where there is no moral turpitude, there can be no moral reform.

Again, the idea that moral reform is *the* end contemplated by the law, in the conviction and imprisonment of its offenders, cannot be admitted. We have always thought that the criminal law, with its threatened penalties for violations of it, was intended quite as much for prevention of crime by its punishments, as well as for the moral cure of the convict. We have thought it a sort of “terror to evil doers.”

If the board of inspectors believed Beale to have been guilty at all, they must have believed him guilty of one of the most aggravated cases of crime that the records of the Pennsylvania courts can produce. We have shown, from their own words, why they could not have doubted his guilt, and yet they further urge his pardon “because full and ample satisfaction has been rendered to public sentiment by the imprisonment he has already undergone.” What business have they thus to

pander to what they must have considered a morbid and misguided "public sentiment." And what is the amount of punishment which will satisfy the public sentiment of Philadelphia, when aroused by the commission of so heinous a crime? Why, not one-fourth of the too moderate sentence of four years and six months. Too moderate, we say, *if there was guilt*. And neither the judge, nor the thus palpably committed board of inspectors, can hide themselves behind the doubts or obscurities of the case. The board also allude to the destitute condition of the prisoner's family. We believe the sympathy for them is universal. But their first and most prominent reasons for recommending the prisoner to mercy are recorded above. We consider them ridiculous, contemptible and stupid. We might even say more. We might enter our protest against that form of *mercy*, which at one and the same time covers the prisoner with a black cloud of doubt and distrust, and asks for his release. But of what avail is our protest; the deed has been done. Still, we enter the protest, although it is but form. We are an humble individual, merely an editor of a Dental Journal; and our sentiments are antagonistic to those expressed and promulgated by the Governor's "county prison" authority. We do not hope to cope with them. Their position is even beyond the limits of our ambition; and we frankly confess to an entire lack of that *wooden-headedness* which would seem to be so peculiarly adapted to the proper fulfillment of the duties of the *board* of inspectors. It gives us pleasure to call attention to the manly and satisfactory manner in which the Governor expresses his personal opinions; and we should not be surprised if some evil-minded person were to insinuate that his quotations from the board of inspectors' records were made use of as a foil, to show off his own frankness.

We have before given our views relative to this case; they are unchanged. We hope the medical and dental professions will unite in crushing forever the weight of testimony such as was used in this most unheard of case. It is indeed an awful example of the risk encountered by those who use anæsthetic agents, without *proper* and reliable witnesses. And it is no less singular than true, that, as things now stand, the testimony of a wife, who may have been present, would not be admitted against the word of a prostitute, or the oath of a victim of delusion. A *man* may lose his life for a rape which was never committed. His own wife may have been present at the alleged moment, but the law rules out her testimony, and conviction is carried on authority freshly sprung from the very bedlam of "dream-land."

CONTINUOUS GUM.—We understand that a patent has been issued to A. B. Sattathwaite, of Lima, Ohio, for an improvement in this direction, though we are as yet in ignorance of its precise nature.

The patterns of improved handles for Plugging Instruments, which were promised for this number are unavoidably crowded out by the press of matter.